

(NASA-SP-7011(127)) AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES, SUPPLEMENT 127, APRIL 1974 (NASA) 85 p HC \$4.00 CSCL 061

N74-26525

904 Unclas 41950

## AEROSPACE MEDICINE AND BIOLOGY

### A CONTINUING BIBLIOGRAPHY

WITH INDEXES

(Supplement 127)

**APRIL 1974** 



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

#### **ACCESSION NUMBER RANGES**

Accession numbers cited in this Supplement fall within the following ranges:

STAR (N-10000 Series) N74-13700—N74-15699

IAA (A-10000 Series) A74-16356—A74-19205

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Tisco, Inc.

The Administrator of the National Aeronautics and Space Administration has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Agency. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through July 1, 1974.

				······································									
1. Report No. NASA SP-7011 (127)	2. Government Accessio	in No. 3	3. Recipient's Catalog No.										
4. Title and Subtitle	<u> </u>	5	, Report Date										
AEROSPACE MEDICINE AND I	BLOLOGY	ļ	April 1974										
A Continuing Bibliograph		127)	, Performing Organizat	ion Code									
7. Author(s)			, Performing Organizat	on Report Na.									
		10	10. Work Unit No.										
9, Performing Organization Name and Address			·····										
National Aeronautics and Washington, D.C. 2054		ļ	11. Contract or Grant No:										
	1:	13. Type of Report and Period Covered											
12. Sponsoring Agency Name and Address													
		1.	. Sponsoring Agency (	Code									
15. Supplementary Notes													
16. Abstract			· · · · · · · · · · · · · · · · · · ·										
				ł									
				1									
This speci	al hibliography	/ lists 279 repo	rts										
		ments introduced											
		echnical inform		•									
1	March 1974.		id e l'oll										
j system in	ridi Cii 157 i												
				•									
				•									
[													
į.													
17. Key Words (Suggested by Author(s))		18. Distribution Statement											
Aerospace Medicine		18. Distribution Statement											
Aerospace Medicine Bibliographies			telad nali	ai tod									
Aerospace Medicine			ified - Unlin	n <b>i</b> ted									
Aerospace Medicine Bibliographies Biological Effects		Unclass											
Aerospace Medicine Bibliographies	20. Security Classif. (c	Unclass of this page)	ified - Unlin 21. No. of Pages 85	22. Price* \$4.00 HC									

## AEROSPACE MEDICINE AND BIOLOGY

## A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 127)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in March 1974 in

- Scientific and Technical Aerospace Reports (STAR)
- International Aerospace Abstracts (IAA).



NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22151 for \$4.00. For copies mailed to addresses outside the United States, add \$2.50 per copy for handling and postage.

### INTRODUCTION

This Supplement to Aerospace Medicine and Biology (NASA SP-7011) lists 279 reports, articles and other documents announced during March 1974 in Scientific and Technical Aerospace Reports (STAR) or in International Aerospace Abstracts (IAA). The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, Aerospace Medicine and Biology concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: IAA Entries and STAR Entries, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in IAA or STAR, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes—subject and personal author—are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1974 Supplements.

### AVAILABILITY OF CITED PUBLICATIONS

#### IAA ENTRIES (A74-10000 series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies are available at \$5.00 per document up to a maximum of 20 pages. The charge for each additional page is 25 cents. Microfiche (1) are available at the rate of \$1.00 per microfiche for documents identified by the # symbol following the accession number. A number of publications, because of their special characteristics, are available only for reference in the AIAA Technical Information Service Library. Minimum airmail postage to foreign countries is \$1.00. Please refer to the accession number, e.g. A74-10763, when requesting publications.

#### STAR ENTRIES (N74-10000 Series)

A source from which a publication abstracted in this Section is available to the public is ordinarily given on the last line of the citation, e.g., Avail: NTIS. The following are the most commonly indicated sources (full addresses of these organizations are listed at the end of this introduction):

Avail: NTIS. Sold by the National Technical Information Service at the price shown in the citation. If no price is shown in a current STAR citation, it may be ascertained by referring to Government Reports Announcements or to NTIS. Beginning with documents announced in Issue 21, 1973, "stocked" reports, such as printed NASA reports are priced on a step schedule ranging irregularly from \$3.00 for a 1-to-25 page report to \$11.00 for 576 to 600 pages, plus \$2.00 for each additional 100-page increment. Demand print reports (those for which a facsimile reproduction will be made to fill orders) are priced at \$4.00 for the first 20 pages plus 25 cents for each five pages or portions thereof. These prices are not applied retroactively; i.e., reports previously announced at a certain price continue to be sold at that price. If "Avail: NTIS" without a price appeared in the citation of a NASA report (asterisked) it is sold at \$3.00 whether printed copy or facsimile is supplied. Because of price changes and possible surcharges, it is recommended that for any document announced in STAR before July 1970, NTIS be queried as to the price. Document prices are subject to change without notice. See "Avail: SOD" below for documents available from both the Superintendent of Documents and NTIS.

Microfiche. Microfiche is available from NTIS at a standard price of \$1.45 (regardless of age) for those documents identified by the # sign following the accession number (e.g., N74-10108#) and having an NTIS availability shown in the citation. Standing orders for microfiche of (1) the full collection of NTIS-available documents announced in STAR with the # symbol. (2) NASA reports only (identified by an asterisk (\*)). (3) NASA-accessioned non-NASA reports only (for those who wish to maintain an integrated microfiche file of aerospace documents by the "N" accession number), or (4) any of these classes within one or more STAR categories, also may be placed with NTIS at greatly reduced prices per title (e.g., 45 cents) over individual requests. Inquiries concerning NTIS Selective Categories in Microfiche should be addressed to the Subscription Unit, National Technical Information Service.

Deposit Accounts and Customers Outside U.S. NTIS encourages its customers to open deposit accounts to facilitate the purchase of its documents now that prices vary so greatly.

NTIS customers outside the United States are reminded that they should add the following handling and postage charges to the standard or announced prices:

<sup>(1)</sup> A microfiche is a transparent sheet of film, 105 x 148 mm in size, containing up to 98 pages of information reduced to micro images (not to exceed 24:1 reduction).

hard (paper) copy, \$2.50 each document; microfiche, \$1.50 each document. For subscribers outside the United States who receive microfiche through the Selective Categories in Microfiche program, NTIS will add 15 cents for each title shipped.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The price is given following the availability line. (An order received by NTIS for one of these documents will be filled at the SOD price if hard copy is requested. NTIS will also fill microfiche requests, at the standard \$1.45 price, for those documents identified by a # symbol.)

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the Mississippi Test Facility, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: NASA Scientific and Technical Information Office. Documents with this availability are usually news releases or informational brochures available without charge in paper copy.

Avail: AEC Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of U.S. Atomic Energy Commission reports, usually in microfiche form, are listed in Nuclear Science Abstracts. Services available from the USAEC and its depositories are described in a booklet, Science Information Available from the Atomic Energy Commission (TID-4550), which may be obtained without charge from the USAEC Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from Dissertation Abstracts, and are sold by University Microfilms as xerographic copy (HC) at \$10.00 each and microfilm at \$4.00 each, regardless of the length of the manuscript. Handling and shipping charges are additional. All requests should cite the author and the Order Number as they appear in the citation.

Avail: HMSO Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc., (PHI), Redwood City, California. The U.S. price (including a service charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown (If none is given, inquiry should be addressed to BLL).

Avail: ZLDI Sold by the Zentralstelle für Luftfahrtdokumentation und Information, Munich, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability: Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent Office. Sold by Commissioner of Patents, U.S. Patent Office, at the standard price of \$.50 each, postage free.

Other availabilities. If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

#### GENERAL AVAILABILITY

All publications abstracted in this bibliography are available to the public through the sources as indicated in the STAR Entries and IAA Entries sections. It is suggested that the bibliography user contact his own library or other local libraries prior to ordering any publication inasmuch as many of the documents have been widely distributed by the issuing agencies, especially NASA. A listing of public collections of NASA documents is included on the inside back cover.

#### SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is \$18.75 domestic; \$23.50 foreign. All questions relating to the subscriptions should be referred to NTIS.

#### ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics and Astronautics
Technical Information Service
750 Third Ave.
New York, N.Y. 10017

British Lending Library Division Boston Spa, Wetherby, Yorkshire, England

Commissioner of Patents U.S. Patent Office Washington, D.C. 20231

ESRO/ELDO Space Documentation Service European Space Research Organization 114, av. Charles de Gaulle 92-Neuilly-sur-Seine, France

Her Majesty's Stationery Office P.O. Box 569, S.E. 1 London, England

NASA Scientific and Technical Information Facility P.O. Box 33 College Park, Maryland 20740

National Aeronautics and Space
Administration
Scientific and Technical Information
Office (KSI)
Washington, D.C. 20546

National Technical Information Service Springfield, Virginia 22151

Pendragon House, Inc. 899 Broadway Avenue Redwood City, California 94063

Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd. Tylers Green London, England

U.S. Atomic Energy Commission Technical Information Center P.O. Box 62 Oak Ridge, Tennessee 37830

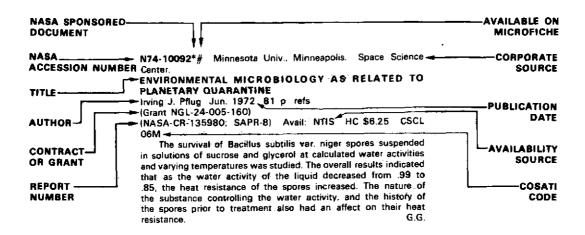
Zentralstelle für Luftfahrtdokumentation und -Information 8 München 86 Postfach 880 Federal Republic of Germany

### TABLE OF CONTENTS

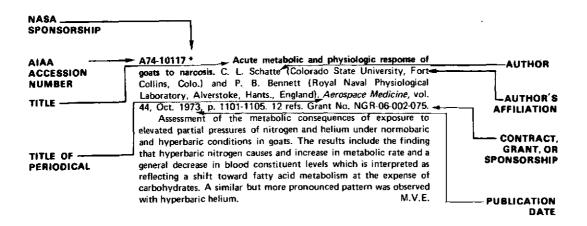
Page

IAA Entries (A74-10000) .														 	91	
STAR Entries (N74-10000)	١.			•	•						•			 	109	
Subject Index				•										 	I- <b>1</b>	
Personal Author Index																

#### TYPICAL CITATION AND ABSTRACT FROM STAR



#### TYPICAL CITATION AND ABSTRACT FROM IAA





# AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 127)

**APRIL 1974** 

#### IAA ENTRIES

A74-16386 Shock tube application in bio-acoustic research. R. P. Hamerník, D. S. Dosanjh, and D. Henderson (New York, State University, Syracuse, N.Y.). In: Recent developments in shock tube research; Proceedings of the Ninth International Symposium, Stanford, Calif., July 16-19, 1973.

Stanford, Calif., Stanford University Press, 1973, p. 144-155, 8 refs. A modified conventional shock tube and its successful application in psychophysiological acoustics are reported. An interesting attempt has been made to exploit the potential of the shock tube for the generation of well controlled transient pressure impulses. A conventional shock tube coupled to a variable-throat area exponential horn terminated in an anechoic chamber yields a wide range of rise times, durations, intensities and spectral characteristics of the impulses. The flexibility of the modified shock tube now provides the capability to simulate a wide spectrum of hazardous impulse noise. The chinchilla has been used as the experimental animal and some of the interesting and unexpected results that are presented are: (1) the possibility that large losses of sensory cells do not necessarily lead to losses in hearing; (2) 'safe' impulse and continuous noise, presented in combination, may lead to profound damage to hearing; and (3) the middle ear may break down with extreme overpressure and actually protect the sensory cells.

A74-16637 # Properties of a nystagmus evoked by rhythmic photostimulation (Svoistva nistagma, vyzvannogo ritmicheskoi fotostimuliatsiei). V. P. Neverov (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). Fiziologicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1487-1493, 21 refs. In Russian.

Eye movements were recorded in experiments on rabbits when rhythmic light signals were delivered to the retina over a period of 60 min in darkness. Immediate photonystagmuses during photostimulation and also later reversive nystagmuses were observed in the rabbits. The interactions between immediate photonystagmuses, reversive trace nystagmuses, and reversive postkinetic nystagmuses are discussed.

V.Z.

A74-16638 # Double physiological tests for simple motor routines of man (Dvoinoe fiziologicheskoe testirovanie prostogo dvigatel'nogo navyka cheloveka). M. S. Zalkind, E. I. Koz'mian, and A. V. Naidel' (Akademiia Nauk SSSR, Institut Problem Peredachi Informatsii, Moscow, USSR). Fiziologicheski Zhurnal SSSR, vol. 59, Oct. 1973, p. 1500-1507, 30 refs. In Russian.

Observations of a monosynaptic H reflex and an evoked EEG response produced by electric stimulation of nerves during the execution of simple habitual movements by human subjects. In tests with wrist bending and foot straightening, the H reflex increased during the motion and decreased after the termination of motion, while the evoked EEG response decreased during the motion and vanished after its termination. A partial correlation between the magnitude of an H reflex and the amplitude of an evoked EEG response was observed.

A74-16639 # Electrical conductivity variations in a blood stream moving at variable rates (Izmeneniia elektroprovodnosti potoka krovi, dvizhushchegosia s peremennoi skorost'iu). B. B. Zelikson (Akademiia Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii, Leningrad, USSR). Fiziologicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1508-1515. 33 refs. In Russian.

Variations in electrical conductivity were studied in the blood stream of anesthetized cats when the blood stream rates were varied by a piston system. Interelectrode impedance variations due to reverse erythrocyte aggregation caused by blood stream rate variations were measured. The contribution of the results to the theoretical foundation of electroplethysmography is evaluated. V.Z.

A74-16640 # Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration (Vliianie lokal'nogo razdrazheniia Varolieva mosta na aktivnost' dykhatel'nykh neironov i dykhanie). G. R. Temin (Kuibyshevskii Meditsinskii Institut, Kuibyshev, USSR). Fiziologicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1542-1547, 31 refs. In Russian.

A74-16641 # Alveolar CO2 tension control and the mechanisms of voluntary respiration control in man (Upravlenie al'veoliarnym napriazheniem CO2 i mekhanizmy proizvol'nogo kontrolia dykhaniia u cheloveka). I. S. Breslav, A. M. Shmeleva, N. N. Kariev, M. A. Pogodin, and R. I. Khvalibova (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). Fiziologiicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1548-1556. 13 refs, In Russian.

A74-16642 # Mechanism of CO2-sensitivity variations in the respiration center (K mekhanizmu izmeneniia chuvstvitel'nosti dykhatel'nogo tsentra k CO2). S. I. Frankshtein, T. I. Sergeeva, Z. N. Sergeeva, and E. S. Ivanova (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR). Fiziologicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1557-1561, 11 refs. In Russian.

The effects of the afferent activities of muscles, vagus nerves and brain on the CO2 sensibility of the respiration center are studied in anesthetized cats after vagotomy, decortication and severance of some muscles and spine. Measurements of lung ventilation, pH, blood pressure and partial CO2 pressure suggest that the chemosensitive structures of the respiration center are susceptible to CO2 pressure variations in blood but do not react on the afferent and efferent activities of nerves.

A74-16643 # Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity (Analiz 'otritsatel'noi fazy' potrebleniia kisloroda y vosstano-

vitel'nom periode posle intensivnoi myshechnoi deiatel'nosti). N. R. Chagovets, N. P. Eremenko, and L. G. Leshkevich (Leningradskii Nauchno-Issledovatel'skii Institut Fizicheskoi Kul'tury, Leningrad, USSR). Fiziologicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1597-1601. 32 refs. In Russian.

A74-16644 # Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation (Zavisimost' mekhanicheskoi chuvstvitel'nosti glaza ot uslovii osveshchennosti i zritel'noi adaptatsii). V. N. Prokof'ev (Moskovskii Nauchno-Issledovatel'skii Institut Glaznykh Boleznei, Moscow, USSR). Fiziologicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1617-1620. 11 refs. In Russian.

A74-16645 # Specific role of wrists in thermoregulation of man (Ob osoboi roli v termoreguliatsii kistei ruk cheloveka). K. P. Ivanov and A. I. Eremiagin (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). Fiziologicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1624-1628, 9 refs, In Russian.

Precision thermometry was applied to various parts of the bodies or subjects whose wrists were cooled by a water flow in special gloves in a study of the contribution of wrists to thermoregulation of the human body. The subjects were confined in a chamber at temperatures raised from room temperature to 41 to 43 C and their wrists were then cooled to about 25.3 C in simpler experiments, and also to 12.5 C, after a cooling recess, in cycled experiments. The effects of wrist cooling on the temperature distribution in various parts of the human body are discussed. Recommendations are given for achieving better overall cooling effects through wrist cooling.

A74-16646 # Diurnal activity rhythm of sweat glands and thermal adaptation (Sutochnyi ritm aktivnosti potovykh zhelez i adaptatsiia k teplu). O. A. Virovets, Fiziologicheskii Zhurnal SSSR, vol. 59, Oct. 1973, p. 1628-1632, 6 refs. In Russian.

Sweat excretion was measured around the clock and the K and Na contents in sweat samples were determined in 3 and 10-day experiments on subjects who received low-salt diets and were kept at 40 C with 20 to 30% humidity in a daily routine of rest with periods of moderate physical exercises. Curves of diurnal variations in sweat discharges are plotted.

V.Z.

A74-16666 Analysis of the astronaut's activity when working in free space. E. V. Khrunov. (Kosmicheskie Issledovaniia, vol. 11, May-June 1973, p. 470-477.) Cosmic Research, vol. 11, no. 3, Nov. 1973, p. 414-419. 5 refs. Translation.

The motions of an astronaut during the execution of extravehicular assignments are analyzed. Formulas are given to describe his hand movements as a function of time in slow motion photographs. Criteria are proposed for the evaluation of his extravehicular training performance. The positive effects of training on the extravehicular activity of Soviet astronaut Leonov are noted. Leonov's and Beliæev's heart beat rates during various phases of their extravehicular activities are discussed. Algorithms are proposed for some extravehicular assignments.

A74-16667 Cytogenetic analysis of seeds of diploid and autotetrapoid forms of Crepis capitlaris after flight on the artificial earth satellite 'Kosmos-368.' R. N. Platonova. (Kosmicheskie Issledovaniia, vol. 11, May-June 1973, p. 478-481.) Cosmic Research, vol. 11, no. 3, Nov. 1973, p. 420-423. 15 refs. Translation.

A74-16739 # Carbon metabolism enzymes and ATP in eyes with disrupted innervation (Fermenty uglevodnogo obmena i ATF v glazu pri narushenii ego innervatsii). lu. A. Petrovich (Moskovskii Meditsinskii Stomatologicheskii Institut, Moscow, USSR) and G. A. Borovik (Permskii Gosudarstvennyi Meditsinskii Institut, Perm,

USSR). Akademiia Nauk SSSR, Doklady, vol. 212, Oct. 21, 1973, p. 1465-1468. 21 refs. in Russian.

A spectrophotometer was used for recording the hexokinase and dehydrogenase activities in the eyes of 112 rabbits, kept one and eight days with traumatic eye innervation damage. Various chemical methods were applied to determine individual enzymes in the frozen aqueous humor, stroma and epithelium of experimental and control rabbits. Possible mechanisms responsible for the effects of innervation damage on ocular enzyme activities are discussed.

V.Z.

A74-16740 # Role of biogenous amines in memory mechanisms (O roli biogennykh aminov v mekhanizmakh pamiati). I. M. Aivazashvili, G. S. Iordanishvili, and V. N. Chikvaidze (Akademiia Nauk Gruzinskoi SSR, Institut Fiziologii, Tiflis, Georgian SSR). Akademiia Nauk SSSR, Doklady, vol. 212, Oct. 21, 1973, p. 1479-1481. 10 refs. In Russian.

The effect of nardil administration on conditioned reflex memory was investigated in rats which developed a fear reflex when they received electric shock on entry in a dark compartment from an illuminated compartment through a hole and then returned into the illuminated compartment to escape the shock. Nardil doses of 10 mg/kg inhibited monoamine-oxidase activity in the rats and, as a consequence, suppressed the fear reflex when nardil was administered two hours before the shock. It is theorized that serotonin accumulation in the brain, due to monoamine-oxidase inhibition, is the cause of fear memorization suppression by previous nardil administration.

A74-16754 # Usefulness of hematological and biochemical variables for the differentiation of impact acceleration effects (O tsennosti gematologicheskikh i biokhimicheskikh pokazatelei dlia differentsirovaniia deistviia udarnykh peregruzok). E. E. Simonov and V. A. Korzhen'iants. Voenno-Meditsinskii Zhurnal, Oct. 1973, p. 65-68. In Russian.

A74-16770 Considerations and guidelines concerning the psychological selection of candidate pilots (Considerazioni e orientamenti in tema di selezione psicologica di candidati piloti). F. Sparvier. *Rivista Aeronautica*, vol. 49, Sept. 1973, p. 57-68, 38 refs. In Italian.

Philosophical analysis of the underlying assumptions which allow a psychologist to select candidate pilots on the basis of predictions about future performance. A distinction is made between cognitive and practical activity, and it is shown that the selection of candidate pilots falls within this second category and can only lead to predictions of future performance rather than complete knowledge, since action no longer takes place in the realm of the true but in the realm of the useful. The formulation of the selection problem with respect to pilots is distinguished from the formulation of the problem with respect to manual workers in general, noting that in the case of pilots the underlying truth of the selection concerns learning, while in the case of the larger group of workers the essential aspect is not learning but productivity.

A.B.K.

A74-16775 # Metabolism under extremal conditions of a space flight and during its simulation (Obmen veshchestv v ekstremal'nykh usloviiakh kosmicheskogo poleta i pri ego imitatsii). I. S. Balakhovskii and Iu. V. Natochin. Moscow, Izdatel'stvo Nauka (Problemy Kosmicheskoi Biologii. Volume 22), 1973. 213 p. 324 refs. in Russian.

Data of metabolism studies covering a decade of manned Soviet space missions are evaluated. Metabolism data of Soviet astronauts are compared with those obtained in space flight simulation experiments and with those of the American space missions. Attention is given to water and salt excretion in flight and immediately after return to the earth. Blood microanalysis methods, including paper sampling and vial sampling techniques, are described. Osmotic water suction mechanisms in the urinary bladder are also topics of discussion.

A74-16797 Effects of cholinergic innervation on the mammalian heart - The cardiomodulator tonus (Effets de l'innervation cholinergique sur le coeur de mammifère - Le tonus cardiomodérateur). P. Duchêne-Marullaz (Institut de Recherches Cardiologiques, Royat, Puy-de-Dôme, France). Journal de Physiologie, vol. 66, Dec. 1973, p. 373-397. 184 refs. In French.

The cardiac distribution of cholinergic fibers is first discussed, followed by a review of the effects of setting cardiomoderating innervations in motion. Effects on the cardiac frequency, on the myocardic contraction, on the excitability and on the propagation of the depolarization wave, and on ventricular compliance are considered. The cardiomoderator tonus is considered in terms of the mechanism of atropinic cardioacceleration, the importance of the cardiomoderator tonus, the influence of the tonus on the force of contractions, and the influence of the tonus on the excitability and on the wave of depolarization. Attention is given to interactions of cholinergic and adrenergic innervations.

A74-16798 Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers (Supériorité du pouvoir discriminateur des cellules mitrales comparé à celui des récepteurs olfactifs). I. Giachetti and P. Mac Leod (Collège de France, Paris, France). Journal de Physiologie, vol. 66, Dec. 1973, p. 399-407, 15 refs. (n French.

The responses of 63 mitral cells in the olfactory bulb of the rat were recorded during exposure to five olfactory stimuli. The overall response rate approximated 50 percent and the active/inhibition ratio 1.5. Each odor evoked a pattern of activations and of inhibitions totally different from the four others. This is in sharp contrast with the results obtained in a parallel study on the responses of 58 olfactory nerve units in the frog during exposure to the same five odorants. This latter study showed that three out of ten pairs of olfactory stimuli evoked significantly similar across-fiber patterns of response.

F.R.L.

A74-16799 Stimulation of the olfactory neuro-epithelium in man by long duration direct efectric currents (Stimulation du neuro-épithélium olfactif chez l'homme par des courants électriques continus de longue durée). A. Uziel (Clinique St.-Charles, Montpellier, France). Journal de Physiologie, vol. 66, Dec. 1973, p. 409-422. 17 refs. In French.

A74-17302 \* Systolic and diastolic time intervals in pulsus alternans - Significance of alternating isovolumic relaxation. D. H. Spodick (Lemuel Shattuck Hospital; Boston University, Boston; Tufts University, Medford, Mass.), V. M. Quarry (Lemuel Shattuck Hospital, Boston, Mass.), and A. H. Khan. American Heart Journal, vol. 87, Jan. 1974, p. 5-10. 27 refs. Grant No. NGR-22-012-006.

Systolic and diastolic time intervals in 14 cardiac patients with pulsus alternans revealed significant alternation of preinjection period (PEP), isovolumic contraction time {IVCT}, left ventricular ejection time (LVET), ejection time index (ETI), PEP/LVET, and carotid dD/dt with better functional values in the strong beats. Cycle length, duration of electromechanical systole (EMS) and total diastole, i.e., isovolumic relaxation period (IRP) and diastolic filling period (DFP) occurred in 7 out of 8 patients. These diastolic intervals alternated reciprocally such that the IRP of the strong beats encroached upon the DFP of the next (weak) beats.

A74-16800 Electrical activity and transmembranar ionic current of the myocardial fiber of the monkey /family of cercopithecidae/ (Activité électrique et courants ioniques transmembranaires de la fibre myocardique de singe /famille des cercopithécidés/). M. Walden, P. Kreher, K. J. Aka, and R. Tricoche (Abidjan, Université, Abidjan, Ivory Coast). Journal de Physiologie, vol. 66, Dec. 1973, p. 455-472. 35 refs. In French. Délégation Générale à la Recherche Scientifique et Technique Contract No. 72,70231,00221,7501.

The study of the cellular electrical activity and the membrane

ionic currents was carried out with the double sucrose gap technique. The records obtained when intraventricular fibers are stimulated reveal two types of all or nothing responses, whose time courses seem to vary with the diameters of the investigated fibers. In voltage clamp conditions the study of membrane ionic currents reveals the existence of (1) an inward current for depolarizations ranging from 20 mV to about 100 mV which can be divided into two components: one having fast kinetics, carried by sodium ions, the other having slow kinetics, mainly carried by calcium ions; (2) a delayed outward current in TXX-MnCl2 solutions, which can be divided into two components. A qualitative study of the conductances responsible for these currents has been made.

A74-16812 The effect of certain cosmic and geophysical factors on the earth's biosphere (Vilianie nekotorykh kosmicheskikh i geofizicheskikh faktorov na biosferu zemli). Edited by Iu. A. Kholodov. Moscow, Izdatel'stvo Nauka (Problemy Kosmicheskoi Biologii. Volume 18), 1973. 210 p. In Russian.

Papers dealing with the biological effects of solar radiation and magnetic fields are included, covering the biosphere, mental and social effects, occurrences of epidemics, plant and bacterial life, and responses of man and animals to magnetic fields and solar activity. The relation between the geomagnetic field and solar radiation on the one hand and life on earth, on the other, is also studied.

V.Ż.

A74-16814 # Some problems involving detailed diachronic investigation of processes in the psychic and social life of man (Nekotorye problemy uglublennogo diakhronicheskogo issledovanila protessov psikhicheskoi i sotsial'noi zhizni cheloveka). N. K. Serov. In: The effect of certain cosmic and geophysical factors on the earth's biosphere. Moscow, Izdatel'stvo Nauka, 1973, p. 26-46, 41 refs. In Russian.

A74-16815 # Heliogeophysical factors of the progress of an epidemic process (Geliogeofizicheskie faktory razvitila epidemicheskogo protsessa). V. N. lagodinskii. In: The effect of certain cosmic and geophysical factors on the earth's biosphere.

Moscow, Izdatel'stvo Nauka, 1973, p. 47-66. 80 refs.

In Russian.

Evidence is given for the existence of correlative and causal relations between the solar activity level, the activity of microorganisms, the frequency and extent of pandemic diseases and epidemics, and living standards. The possibility of prediction of epidemics is discussed by an analysis of a large volume of pertinent data and studies worldwide.

V.Z.

A74-16816 # Characterization of a perturbed geomagnetic field as a stimulant (Kharakteristika vozmushchennogo geomagnitnogo potia kak razdrazhitelia). N. I. Muzalevskaia. In: The effect of certain cosmic and geophysical factors on the earth's biosphere. Moscow, Izdatel'stvo Nauka, 1973, p. 123-142.41 refs. In Russian.

An attempt is made to prove mathematically that a perturbed geomagnetic field can affect biological processes and life on earth. The energy characteristics of a perturbed geomagnetic field are discussed in an elementary unit volume as possible factors of biological stimulation. Expressions are given for local energy characteristics of the geomagnetic field, with attention to conditions under which the energy density and the magnetic flux of a perturbed geomagnetic field exceed their threshold levels. The biological activity of the geomagnetic field is plotted vs responses of a living organism to increasing stimuli.

A74-16817 # Reactions to magnetic fields in the organisms of animals and man (Reaktsii organizma zhivotnykh i cheloveka na magnitnye polia). Iu. A. Kholodov. In: The effect of certain cosmic and geophysical factors on the earth's biosphere.

Moscow, Izdatel'stvo Nauka, 1973, p. 143-163. 88 refs. In Russian.

#### A74-16818

Review of Soviet and non-Soviet papers concerning the biological effects of magnetic fields in humans and animals. Experiments on mice, Staphylococcus aureus, rats, chicken embryos, worms, mollusks, insects, fishes, reptiles, birds, rabbits, and humans are covered. Direct experimental evidence concerning the effects of fluctuations of the geomagnetic field on living organisms is noted.

V.Z.

A74-16818 # Level of spontaneous phage production in the lysogenic system E. coli K12 as a test of solar activity (Uroven' spontannoi produktsii faga v lizogennoi sisteme E. coli K12 kak test solnechnoi aktivnosti). V. S. Levashev, M. M. Gorshkov, S. S. Belokrysenko, and M. G. Davydova. In: The effect of certain cosmic and geophysical factors on the earth's biosphere.

Moscow, Izdatel'stvo Nauka, 1973, p. 189-194, 7 refs. In Russian.

A74-16819 # Perturbations of the terrestrial electromagnetic field and the problem of heliobiological relations (Vozmushcheniia elektromagnitnogo polia zemli i problema geliobiologicheskikh sviazei). B. M. Vladimirskii, lu. N. Achkasova, and L. V. Monastyrskikh). In: The effect of certain cosmic and geophysical factors on the earth's biosphere. Moscow, Izdatel'stvo Nauka, 1973, p. 195-199, 15 refs. In Russian.

Cultures of various bacterial strains were exposed to electromagnetic fields at 0.1 to 10 Hz for 18 to 20 hr in a capacitor at constant temperature. Productivity, bactericide resistance, and genetic, morphological, fermentative and antigenic properties of exposed strains were compared with those of control strains. Stimulation of productivity was observed in exposed strains. An attempt is made to extend these observations to the biological effects of solar radiation during solar activity events.

A74-16851 Measurement errors of CO analyzers and their influence on the evaluation of the effect of CO in humans (Messfehler von CO-Analysegeräten und Einfluss auf die Beurteilung der CO-Wirkung beim Menschen). G. Kleinhanss, G. Piekarski, and M. Holl (Institut für Wehrmedizin und Hygiene, Koblenz, West Germany). Wehrmedizinische Monatsschrift, vol. 17, Dec. 1973, p. 361-369, 10 refs. In German.

The degree of harmful effect of carbon monoxide in humans is determined by the duration of the effect and the concentration c in the inspired air. If certain conditions are observed, the product c & t correlates with the CO-Hb level in the blood. The product c & t, which is relatively easy to measure, can therefore be used as a parameter for the effect of CO. The information value of c & t depends on the accuracy of the determination of the CO concentration. Static and dynamic errors in measurement of two CO infrared absorption spectrometers were investigated, and results are used to provide guidelines for improved measurement accuracy. (Author)

A74-16852 Training in aviation medicine for doctors and hospital personnel (Flugmedizinische Ausbildung für Ärzte und Sanitätspersonal). J. Garbe (Bundesministerium der Verteidigung, Luftwaffe, Flugmedizinisches Institut, Fürstenfeldbruck, West Germany). Wehrmedizinische Monatsschrift, vol. 17, Dec. 1973, p. 376-382. In German.

The nature and extent of courses taken by German Air Force doctors and medical staff personnel are outlined. The medical training program includes a 'Basic Course for Aviation Doctors,' an 'Introduction Course for Medical Officers to First-Aid and Aviation Medicine,' and training courses for assistants to medical doctors and for medical orderlies accompanying sick and wounded during air transportation.

V.P.

A74-16853 Medicine and technology (Medizin und Technik). A. Pupato. Schweizerische Technische Zeitschrift, vol. 70, Dec. 20, 1973, p. 1029-1059. In German.

The advances in medical applications of modern technology since 1934 are reviewed, covering optical microscopy, electron microscopy, intensive care units, the artificial kidney and hemo-

dialysis, the defibrillator, the rotating membrane kidney, open heart surgeries, the heart-lung machine, electrode implantation techniques, and the hypothermic machine. Some details are also given on angiographic techniques as these have been developed and are applied in Switzerland. The advances in this field are assessed as extremely beneficial to practical and scientific medicine.

V.Z.

A74-17008 A new catheter technique for His bundle recordings via the arm veins. O. S. Narula, M. Runge, and P. Samet (Mount Sinai Medical Center of Greater Miami, Miami Beach; Miami, University, Miami, Fla.). British Heart Journal, vol. 35, Dec. 1973, p. 1226-1233. 17 refs.

A new technique for recording His bundle and right bundle-branch electrograms via the arm veins is described. In 25 patients, an ordinary bipolar pacing catheter was introduced into an arm vein and the tip positioned in the right atrium. The catheter tip was looped in a figure-of-6 shape in the right atrium. The new catheter technique provides an alternative route for catheter introduction in patients in whom femoral veins cannot be used, and may prove to be the method of choice in selected cases requiring long-term monitoring of His bundle potentials in view of the stability of the His bundle recordings.

A74-17009 Use of bicycle ergometry and sustained handgrip exercise in the diagnosis of presence and extent of coronary heart disease. R. H. Helfant, V. S. Banka, M. A. DeVilla, R. Pine, V. Kabde, and S. G. Meister (Pennsylvania, University, Philadelphia, Pa.). British Heart Journal, vol. 35, Dec. 1973, p. 1321-1325, 16 refs.

A74-17228 # Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads (Issledovanie vilianiia vibratsii mashin i instrumenta na ruki cheloveka-operatora pri var'irovanii nachal'nykh usilii). Z. M. Butkovskaia, E. N. Kadyskina, B. A. Potemkin, and K. V. Frolov. In: Vibrational insulation of machinery and protection of the human operator from vibrations.

Nauka, 1973, p. 5-16. 37 refs. in Russian.

A74-17229 # Construction of a dynamic model for the body of a human operator exposed to the action of random wideband vibrations (Postroenie dinamicheskoi modeli tela cheloveka-operatora, podverzhennogo deistvilu shirokopolosnykh sluchainykh vibratsii). B. A. Potemkin and K. V. Frolov, In: Vibrational insulation of machinery and protection of the human operator from vibrations.

Moscow, Izdatel'stvo Nauka, 1973, p. 17-30. 16 refs. In Russian.

A74-17230 # Functional modeling in the biomechanical analysis of the human operator (Funktsional'noe modelirovanie v biomekhanicheskom analize cheloveka-operatora). K. K. Glukharev and K. V. Frolov. In: Vibrational insulation of machinery and protection of the human operator from vibrations.

Moscow, Izdateľstvo Nauka, 1973, p. 31-38, 28 refs.

In Russian.

The analytical approximation of the empirical frequency characteristics of the body of an operator subjected to random vibrations is discussed. A method for constructing dynamic models of such a system is proposed in which the mechanical system is represented in the form of a quadrupole. The method is applied to the construction of mechanical models for three positions of the human operator.

V.P

A74-17231 # Technique for an experimental investigation of the dynamic characteristics of a human operator under random vibrational loads (Netodika eksperimental nogo issledovanila dinamicheskikh kharakteristik cheloveka-operatora pri sluchainom vibrationnom vozdeistvii). G. la. Panovko, B. A. Potemkin, and V. S. Solov'ev. In: Vibrational insulation of machinery and protection of the human operator from vibrations. Moscow, Izdatel'stvo Nauka, 1973, p. 38-40. In Russian.

A74-17256 On studying the moon scientists. I. Mitroff (Pittsburgh, University, Pittsburgh, Pa.). New Scientist, vol. 60, Dec. 27, 1973, p. 900, 901.

A philosophical inquiry into the psychology of the Apollo project scientists, based on interviews with 42 eminent Apollo scientists after Apollo 11 landing, suggests a deep permeation of science with subjective and even irrational ideas - a phenomenon which should be taken into account in shaping modern conceptions of science. The more significant statements of the interviewed scientists are as follows: an uninvolved, unemotional scientist is as fictitious as the mad scientist eager to destroy the world for knowledge; speculative scientists and data-bound scientists are the two contrasting extreme types of the modern scientists; and an open mind is a more likely property of a 'lesser' scientist than of a 'greater' one.

A74-17291 Theoretical approaches to human error /Ergonomic Research Society Lecture 1973/. W. T. Singleton (Aston, University, Birmingham, England). Ergonomics, vol. 16, Nov. 1973, p. 727-737, 37 refs.

It is shown that errors or accidents are in no sense homogeneous. There are many kinds of errors, many different causation factors, and many relevant models or theories. The skill of the ergonomist lies in his ability to match the most relevant taxonomy and theory to the particular practical problem. For example, it is possible to speculate that at the present time problems of road accidents might best be approached by a psychopathological method, the design of process systems by the utilization of field theories, and the study of aircraft accidents by concentration on people-interaction aspects, Attention is given to the following theoretical approaches: psychoanalytic, stimulus-response, field, cybernetic, skill, statistical decision, arousal/stress, and social.

A74-17292 \* The effects of intermittent noise on human serial decoding performance and physiological response. D. W. Conrad (North Carolina State University, Raleigh, N.C.). Ergonomics, vol. 16, Nov. 1973, p. 739-747. 24 refs. Grant No. NGL-34-002-055.

A74-17293 Dials v counters - Effects of precision on quantitative reading. W. E. Nason and C. A. Bennett (Kansas State University of Agriculture and Applied Science, Manhattan, Kan.). Ergonomics, vol. 16, Nov. 1973, p. 749-758. 16 refs.

An experiment was performed comparing dials and counters at three levels of precision (10, 100 and 1000 values). Fifteen students, instructed to accuracy, read 19 settings on each display in randomized order. No speed differences were found among counters, dial reading was successively slower for higher precision dials, and all counters were superior to all dials. Various subject interactions showed that some subjects read higher precision dials especially slowly. Errors were committed only with dials. It is concluded that counters are superior to dials for all quantitative reading tasks. Discussion of check reading and qualitative reading suggests that properly designed counters might also be superior for these tasks. There may be few, if any, situations, from the standpoint of performance, where dials should be employed. [Author)

A74-17294 Dark adaptation recovery after pulsed light. D. J. Florip and R. W. Bauer (U.S. Army, Human Engineering Laboratories, Aberdeen Proving Ground, Md.). Erganomics, vol. 16, Nov. 1973, p. 759-764. Army-supported research.

Recovery of complete dark adaptation was observed after exposure to single pulses of light, Illuminances were measured at the subject's face and durations ranged from 0.01 to 1.0 second. Subjects recorded their own recovery by adjusting an adaptometer to the lowest luminance detectable. Recovery times were sensitive to both duration and illuminance but varied most predictably with total light flux as measured in lumen-seconds. (Author)

A74-17295 Influence of after-movement on muscle memory following isometric muscle contraction. J. Heide (Danmarks Tekniske Hojskoke, Copenhagen, Denmark) and S. Molbech (Danish National Association for Infantile Paralysis, Hellerup, Denmark). Ergonomics, vol. 16, Nov. 1973, p. 787-796. 21 refs. Research supported by the Danish Government Fund for Scientific and Industrial Research.

A74-17302 \* Systolic and diastolic time intervals in pulsus alternans - Significance of alternating isovolumic relaxation. D. H. Spodick (Lemuel Shattuck Hospital; Boston University, Boston; Tufts University, Medford, Mass.), V. M. Quarry (Lemuel Shattuck Hospital, Boston, Mass.), and A. H. Khan. American Heart Journal, vol. 87, Jan. 1974, p. 5-10. 27 refs. Grant No. NGR-22-012-006.

Systolic and diastolic time intervals in 14 cardiac patients with pulsus alternans revealed significant alternation of preinjection period (PEP), isovolumic contraction time (IVCT), left ventricular ejection time (LVET), ejection time index (ETI), PEP/LVET, and carotid dD/dt with better functional values in the strong beats. Cycle length, duration of electromechanical systole (EMS) and total diastole, i.e., isovolumic relaxation period (IRP) and diastolic filling period (DFP) occurred in 7 out of 8 patients. These diastolic intervals alternated reciprocally such that the IRP of the strong beats encroached upon the DFP of the next (weak) beats.

A74-17500 Automatic analysis and detection of EEG spikes. J. R. Smith (Florida, University, Gainesville, Fla.). IEEE Transactions on Biomedical Engineering, vol. BME-21, Jan. 1974, p. 1-7. 12 refs. NSF Grant No. GK-15373; Grant No. AF-AFOSR-72-2171.

A method for detecting spikes in the EEG is described. A digital computer is used to perform a detailed analysis of abnormal spikes to obtain quantitative values for spike characteristics and to determine the parameter values to be used in a special-purpose spike detector. This detector is described together with application results. (Author)

A74-17794 Communication with extraterrestrial intelligence. Edited by C. Sagan (Cornell University, Ithaca, N.Y.). Cambridge, Mass., MIT Press, 1973. 464 p.

The proceedings this book represents for the first international conference on extraterrestrial civilizations and problems of contact with them, held in September 1971 in Soviet Armenia, shows this conference to have been a gathering of workers in a variety of fields including astronomy, physics, radio technology, computer science, chemistry, biology, linguistics, archaeology, anthropology, sociology, history, and cryptoanalysis, and to have brought together an international galaxy of scientists. The participants have revised and updated their contributions, and the results is an illuminating discussion, touching on many of the most critical questions in science and human affairs. Special attention is given to the plurality of planetary systems in the universe, the origin of life on earth, the possibility of life on other cosmic bodies, the origin and development of technological civilizations, problems in searching for intelligent signals or for evidence of astroengineering activities, and the problems and possible consequences of establishing contact with extraterrestrial civilizations.

A74-17846 \* On the dynamical realization of /M, R/-systems. R. Rosen (New York, State University, Buffalo, N.Y.). Bulletin of Mathematical Biology, vol. 35, Apr. 1973, p. 1-9. Grants No. NGR-33-015-016; No. NIH-HO-05136-02.

A new manner of representing a class of abstract cell models previously developed by the author is presented. Some of the properties of this dynamical representation are explored, and their consequences discussed. (Author)

A74-17868 \* Implantable telemetry systems for use in animal monitoring. H. Sandler, T. B. Fryer (NASA, Arnes Research Center, Moffett Field, Calif.), and H. L. Stone (Marine Biomedical

Institute, Galveston, Tex.). Biomaterials, Medical Devices, and Artificial Organs, vol. 1, no. 2, 1973, p. 405-417. 30 refs.

A74-17869 \* An integrated human thermal system and its unsteady-state simulation. F. T. Hsu, C. L. Hwang, S. A. Konz, and L. T. Fan (Kansas State University of Agriculture and Applied Science, Manhattan, Kan.). International Journal of Biomedical Engineering, vol. 1, no. 1, 1973, p. 55-78. 15 refs. Grant No. NGR-17-001-034; Contract No. F44620-68-0020. Project THEMIS.

Consideration of an integrated human thermal system consisting of a human thermal system proper and an external thermal device. A mathematical model of the integrated system has been used in a computer simulation, and the simulation results have been verified through comparison with the results of experiments carried out on nine human subjects. The comparison indicates that the model simulates the system reasonably well.

M.V.E.

A74-17879 Quantitative videoangiocardiography, a method for measuring the heart's pumping function. R. P. van Wijk van Brievingh (Delft, Technische Hogeschool, Delft, Netherlands). Delft Progress Report, Series B - Electrical, Electronic and Information Engineering, vol. 1, Dec. 1973, p. 11-21. 21 refs.

Discussion of the progress of an assembly being developed for quantitative studies of the pumping function of the heart. One of the principal purposes of the assembly is quantitation of the pumping function in conjunction with catheterization procedures. Other objectives of the assembly include video signal recording on a magnetic drum, selective and fractional injection of contrast medium, valve and pupillary muscle locating from shadow images, and data processing.

V.Z.

A74-17882 # Behavioral stress response related to passenger briefings and emergency warning systems /Commercial airlines/. M. A. Becker (California State University, Los Angeles; USAF, Van Nuys Air National Guard Base, Calif.). SAFE Journal, vol. 3, 2nd Quarter, 1973, p. 6-9. 11 refs.

A74-17907 \* Separation of small circular DNA molecules from the blue-green alga Anacystis nidulans. Y. Asato (Southeastern Massachusetts University, North Dartmouth, Mass.) and H. S. Ginoza (NASA, Ames Research Center, Planetary Biology Div., Moffett Field, Calif.). Nature New Biology, vol. 244, Aug. 1, 1973, p. 132, 133, 9 refs.

A74-17910 A noninvasive pressure-pulse recorder - Development and rationale. J. K. Raines, M. Y. Jaffrin, and S. Rao (MiT, Cambridge, Mass.). Association for the Advancement of Medical Instrumentation, Journal, vol. 7, Sept.-Oct. 1973, p. 245-250, 9 refs. Grants No. NIH-HL-14-209; No. NIH-RR-88.

A new instrument has been built that permits accurate non-invasive recordings of the arterial pressure pulse. The instrument consists of a monitoring cuff with a measured air injection system and an electronic transducing circuit. A procedure has been developed to produce recordings that are reproducible and compatible from location to location. Comparison with intra-arterial measurements has shown that the instrument produces a faithful reproduction of the arterial pulse contour. The instrument, which is undergoing clinical evaluation, shows great promise for patient monitoring and detection of occlusive diseases. (Author)

A74-17931 \* Cognitions and 'placebos' in behavioral research on ambient noise. E. R. Harcum and P. M. Monti (College of William and Mary, Williamsburg, Va.). Perceptual and Motor Skills, vol. 37, Monograph Supplement 1, 1973, p. 75-99. 49 refs. Contract No. NAS1-9461-2.

Investigation of the effects of noise on visual and psychomotor tasks, with special attention to influences of certain cognitive

variables. The results include the finding that 100-dB ambient noise has no effects per se, though cognitive variables in the testing situation affect both performance and ratings of disturbance. M.V.E.

A74-17945 # Cross-correlation analysis of the tension rhythm in various cerebral formations during the formation of a functional system of defensive type (Kross-korreliatsionnyi analiz ritma napriazheniia razlichnykh obrazovanii golovnogo mozga pri formirovanii funktsional'noi sistemy oboronitel'nogo kharaktera). A. M. Mamedov (Akademiia Medistinskikh Nauk SSSR, Moscow, USSR). Akademiia Nauk SSSR, Doklady, vol. 212, Oct. 1, 1973, p. 1017-1020. In Russian.

A74-17946 # Information processing, a behavioral event, and cortical neurons (Obrabotka informatsii, povedencheskii akt i korkovye neirony). V. B. Shvyrkov and lu. I. Aleksandrov (Akademiia Nauk SSSR, Institut Psikhologii, Moscow, USSR). Akademiia Nauk SSSR, Doklady, vol. 212, Oct. 1, 1973, p. 1021-1024. 14 refs. In Russian.

Experiments were conducted on 12 anesthetized rabbits receiving conditioned stimuli in the form of flash light signals synchronized with acoustic pulses, and unconditioned electric cutaneous stimuli. The purpose of the experiments was to identify those response phases of cortical somato-sensory neurons which represent the reactions to both conditioned and unconditioned stimuli and, consequently, correspond to a behavioral event. It is theorized that an afferent synthesis mechanism is active in information processing for an individual behavioral event.

V.Z.

A74-17951 Lack of bacterial survival under Cythereanoriented conditions. N. K. Ichinose and C. E. Folsome (Hawaii, University, Honolulu, Hawaii). *Space Life Sciences*, vol. 4, Sept.-Dec. 1973, p. 332-334.

A74-17952 The influence of long-term intermittent exposures to hypoxia on gastric emptying time in rats. H. S. Fang and C. F. Chen (National Taiwan University, Taipei, Nationalist China). Space Life Sciences, vol. 4, Sept.-Dec. 1973, ρ. 335-337, 9 refs. Research supported by the National Science Council of Nationalist China.

A74-17953 The influence of prolonged semi-starvation on the incidence of pulmonary hemorrhage following rapid decompression. J. D. Lin and H. S. Fang (National Taiwan University, Taipei, Nationalist China), Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 338-340.

A74.17954 Iron-sulphur proteins - Their possible place in the origin of life and the development of early metabolic systems. R. H. Wickramasinghe (Edinburgh, University, Edinburgh, Scotland). Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 341-352, 84 refs.

A74-17955 \* Lipid composition of slash pine tissue cultures grown with lunar and earth soils. J. L. Laseter, J. D. Weete (Louisiana State University, New Orleans, La.; Lunar Science Institute, Houston, Tex.), P. S. Baur, and C. H. Walkinshaw (Louisiana State University, New Orleans, La.; Lunar Science Institute; NASA, Johnson Space Center, Lunar Receiving Laboratory, Houston, Tex.). Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 353-356. 12 refs. Contracts No. NAS9-12941; No. NSR-09-051-001.

Lipid analyses were conducted on slash pine tissues grown in culture in the presence of lunar (Apollo 15) and earth soils. Significant reductions in the total lipids, fatty acids, and sterol components were found in the tissues grown in contact with each of the soils employed when compared to the control. Tissues grown with lunar soil showed the greatest reductions. These results are discussed with respect to previous ultrastructural studies on similarly treated slash pine tissues and lipid analyses on tobacco tissue cultures. (Author)

A74-17956 \* An observation about the relative hardiness of bacterial spores and planetary quarantine. C. A. Trauth, Jr. (Sandia Laboratories, Albuquerque, N. Mex.). Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 357-367. 9 refs. NASA-supported research. NASA Order W-12853.

Planetary quarantine objectives are shown to be critically dependent on the deviation in the actual decimal-reduction-time or D values (i.e., the time necessary to reduce the population to one-tenth of its original value) of organisms on spacecraft from the values chosen for spacecraft sterilization that have been selected conservatively relative to defined experimental procedures and bacterial spore stocks. New data indicate that these D values are not conservative when compared with those of naturally occurring organisms. The possible implications of these new data for planetary quarantine are analyzed.

M.V.E.

A74-17957 \* The gravity reference response, the rotation sensation, and other illusory sensations experienced in aircraft and space flight. G. L. Shillinger, Jr., R. J. von Baumgarten, and G. Baldrighi (NASA, Ames Research Center, Moffett Field, Calif.; Michigan, University, Ann Arbor, Mich.). Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 368-390, 26 refs. Contract No. NAS2-6057.

An analysis of the gravitational and inertial forces which act during aircraft flight upon the vestibular systems of the aircraft occupants reveals that in the absence of a visual horizon, certain illusory sensations are predictable for various acceleration environments. The 'inversion illusion' (Graybiel and Kellog, 1966) felt by some human subjects at 0 g seems to be different from the rotation sensation and could be caused by the diminished pressure forces of the otoliths on the maculae. The 'inversion illusion' of man correlates well with the blind fish diving behavior observed during aircraft parabolic flight (von Baumgarten et al., 1969, 1972). It is suggested that the fish low g diving response and the human inversion illusion are due to the substitution of a predominantly shearing force of low magnitude as a vestibular reference in place of a normal, predominantly pressure force. This hypothesis indicates that vestibular senses alone cannot provide meaningful postural orientation to simulated or actual gravity of a magnitude below that of earth's gravity.

A74-17958 # A useful test in selecting motion-sick-prone individuals. P. J. Dowd (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 391-401, 28 refs.

This test is a result of the past decade of studies investigating the vestibular sensitivity of individuals to Coriolis accelerations. A significant differentiation shown between the 'nonsick' (NS) and the 'sick' (S) subjects within each peer group (navigators, pilots, and nonflying personnel) indicates its value in testing the level of resistance an individual has to Coriolis accelerations; this supports its usefulness in determining an individual's resistance to motion sickness. The studies - conducted on experienced pilots (NS-299, S-51), navigators (NS-60, S-34), airman trainees (NS-91, S-19), and pentathlon athletes (NS-14, S-0) - demonstrate the usefulness of this test in the overall selection of personnel in preflight, postflight, and training programs. (Author)

A74-17959 Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations. P. A. Volz and M. Dublin (Eastern Michigan University, Ypsilanti, Mich.). Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 402-414. 67 refs.

A74-17960 \* The effect of bedrest on adrenal function. C. S. Leach, S. B. Hulley, P. C. Rambaut, and L. F. Dietlein (NASA, Johnson Space Center, Houston, Tex.). Space Life Sciences, vol. 4, Sept.-Dec, 1973, p. 415-423, 22 refs.

Eight male subjects were subjected to continuous bedrest for 24-80 weeks for the purpose of studying metabolic responses. Three of the subjects did supine exercises daily during part of the study.

Adrenal function was examined in relation to adrenal cortical and medullary excretions. The results reveal an increase in hydrocortisone throughout the test period, a decrease in norepinephrine and no change in epinephrine. These data suggest that exercise could decrease the severity of deconditioning caused by bedrest. (Author)

A74-17961 \* An environmental chamber system for prolonged metabolic studies on small animals. J. P. Jordan, L. J. Huston, J. B. Simmons, II, D. P. Clarkson, W. W. Martz, and C. L. Schatte (Colorado State University, Fort Collins, Colo.). Space Life Sciences, vol. 4, Sept. Dec. 1973, p. 424-433. 9 refs. Grants No. NsG-300-63; No. NGR-06-002-075.

Measurement of metabolic adaptation to marginally stressful environments requires both precise regulation of a variety of atmospheric factors for extended periods of time and the capacity to employ sensitive parameters in an undisturbed subject. This paper describes a metabolic chamber system which can simultaneously maintain groups of small animals in two completely separate closed environments having different pressures, temperatures and gas compositions for an indefinite period. Oxygen consumption, carbon dioxide production, food and water consumption and animal activity cycles can be continuously, monitored and quantified 24 h per day while the animals are in an unrestrained state. Each chamber can be serviced and the animals handled, injected and sacrificed without subjecting them to barometric stress. Several unique electrical and mechanical components allow semi-automated data collection on a continuous basis for indefinite periods of time. (Author)

A74-17963 On evolution of the photosynthetic pigments. V. B. Evstigneev (Academy of Sciences, Institute of Photosynthesis, Moscow, USSR). (International Congress on Photobiology, 6th, Bochum, West Germany, Aug. 21-25, 1972.) Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 448-454. 13 refs.

Some considerations on the origin of the photosynthetic pigment apparatus in the period of transition of organisms from heterotrophic to phototrophic mode of life and further evolution of this apparatus are given in this paper. Some ideas about interelation between 'major' and 'auxiliary' pigments and about different forms of the pigments in vivo are discussed from an evolutionary point of view. (Author)

A74-17964 Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants. D. O. Hall, R. Cammack, and K. K. Rao (King's College, London, England). (International Congress on Photobiology, 6th, Bochum, West Germany, Aug. 21-25, 1972.) Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 455-468. 77 refs.

Ferredoxins are present in a wide range of organisms, from the primitive anaerobic bacteria to higher plants and animals, where they function in diverse electron transfer processes. Anaerobic bacteria, like the clostridia, contain 8 Fe ferredoxins with a peptide chain of 55 amino acid residues which could be arranged in two similar halves suggesting the evolution of the molecule, from a prototype of 26 amino acid residues, by gene duplication. Since these ferredoxins contain a high predominance of certain amino acids detected in meteorites and lunar samples and synthesized under simulated prebiotic environment, and since iron and sulfur could be incorporated easily into the apoprotein in anaerobic conditions, the ferredoxin molecule could have been formed in the early periods of the origin of life.

A74-17965 Thermodynamics of thermal radiation from stars photoautotrophs and biospheres. A. Rueda (Cornell University, Ithaca, N.Y.). (International Congress on Photobiology, 6th, Bochum, West Germany, Aug. 21-25, 1972.) Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 469-489. 75 refs. Navy-supported research.

Photoautotrophs are almost the exclusive providers of chemical free energy to the earth biosphere. Their importance in coadjuvating the evolutionary development of higher forms of life in other planets

is briefly discussed from this point of view. A simple analysis based on the nonequilibrium thermodynamics of thermal radiation fields is performed. The analysis relates well known standard parameters of stars of the main sequence to the thermodynamic bounds on the free energy acquisition of planetary photosynthetic processes activated by the star radiation. Upper bounds to permissible wavelengths. active in photosynthesis easily follow. Simple inferences can then be made about the possible types of main sequence stars with planetary systems where exobiological photoautotrophs might have evolved. As red dwarves constitute both the great majority of companions to the sun and the majority of main sequence stars in our Galaxy, emphasis is placed on discussing the case of planetary systems of stars with low photospheric temperatures. Bounds to the free energy intake per unit area by the biospheres of planets in planetary systems of late type main sequence stars are estimated and compared. Some simple conclusions are drawn. (Author)

A74-17966 Cytochrome c and evolution of the energy acquiring system. T. Yamanaka (Osaka University, Toyonaka, Osaka, Japan). (International Congress on Photobiology, 6th, Bochum, West Germany, Aug. 21-25, 1972.) Space Life Sciences, vol. 4, Sept.-Dec. 1973, p. 490-504. 83 refs.

Review of the results of an investigation on the reactivity of cytochrome c molecules derived from various organisms with Pseudomonas aeruginosa nitrite reductase and cow cytochrome oxidase. These results suggest that the evolution of the cytochrome c molecule may be causatively connected with the evolution of cytochrome oxidase, and that the latter may be intimately related to the genesis of molecular oxygen in the biosphere.

M.V.E.

A74-18075 Accentuation of the perceived velocity in intermittent illumination - Influence of the phase relationships (Accentuation de la vitesse perçue en éclairage intermittent - Influence du rapport de phases). J. Chevrier and A. Delorme (Montreal, University, Montreal, Canada), Canadian Journal of Psychology, vol. 27, Dec. 1973, p. 391-399, 23 refs. In French. National Research Council of Canada Grant No. APA-274.

A study was made of the frequency and phase relationship of an intermittent illumination on the perception of velocity. The subject's task consisted of an adjustment of the velocity of a mobile arrangement illuminated continuously in comparison with an identical arrangement illuminated intermittently. The results obtained confirm previous studies in showing (1) an overestimation of the perceived velocity in intermittent illumination, and (2) an evolution of the effect according to a curve with a maximum (9 Hz/sec) as a function of frequency.

A74-18175 Dissolution of blood clots, possibilities and problems (Auflösung von Blutgerinnseln, Möglichkeiten und Probleme). R. Gottlob (Chirurgische Universität-Klinik, Vienna, Austria). Naturwissenschaftliche Rundschau, vol. 27, Jan. 1974, p. 16-23. 24 refs. In German.

The mechanisms of fibrinolysis are discussed together with details of enzymatic investigations. Morphological studies are considered, giving attention to studies conducted with the normal optical microscope, immunofluorescence studies, fibrin investigations, plasminogen studies, and plasmin inhibitors. New explanations are presented regarding the mechanisms involved in the dissolution of a thrombus.

A74-18192 The two mechanisms of vision (Les deux mécanismes de la vision). M. Jeannerod (Université Claude Bernard, Lyons, France). La Recherche, vol. 5, Jan. 1974, p. 23-32. 28 refs. In French.

Vision is shown to involve essentially two functions: (1) the location and identification of the shape and nature of objects, and (2) the tracking and assessment of the motion of objects observed.

These two functions are implemented by two distinct eye and brain systems. Yet, however distinct, these systems cooperate intimately in providing ambient and focal vision.

M.V.F.

A74-18193 Origin of life (L'origine de la vie). M. Calvin (California, University, Berkeley, Calif.), La Recherche, vol. 5, Jan. 1974, p. 44, 45, 47-50, 55-57. 17 refs. In French.

Review of the advances of recent years in the fields of biology, chemistry, geology, and astronomy that made possible an interdisciplinary approach to the problem of the origin of life. Special attention is given to possible origins of prebiological systems and to experiments of prebiological molecular evolution. Molecular asymmetry and autocatalytic properties are pointed out as the hallmarks of living matter. The various stages in the organization of living matter are examined, and the implications of their characteristics are discussed.

A74-18196 Artificial lung - A breakthrough confirmed (Poumon artificiel - Une percée qui se confirme). M. de Meuron-Landolt. *La Recherche*, vol. 5, Jan. 1974, p. 80-83. 7 refs. In French,

Review of the origin, development, and present state of the art of artificial blood oxygenators. Special attention is given to the latest French contributions to the development of membrane-using artificial blood oxygenators. In particular, the design, operation, and application range are described for the complete set of French equipment presented at the meeting of the American Society for Artificial Internal Organs in April 1973.

M.V.E.

A74-18286 \* Survival of common bacteria in liquid culture under carbon dioxide at high temperatures. K. A. Souza and L. P. Zill (NASA, Ames Research Center, Planetary Biology Div., Moffett Field, Calif.). Nature, vol. 247, Jan. 4, 1974, p. 67.

A74-18304 # Interplanetary belt of life (Mezhplanetnyi poias zhizni). I. D. Ivanov (Bolgarskaia Akademiia Nauk, Tsentral'naia Laboratoriia Obshchei Genetiki, Bulgaria). Bolgarskaia Akademiia Nauk, Doklady, vol. 26, no. 10, 1973, p. 1391-1394, 10 refs. In Russian.

The idea of the existence of an interplanetary zone about the sun, in which the conditions are favorable for the genesis and existence of live systems is discussed on the basis of biological data and physical and chemical data on planets. The analysis indicates that such a zone would be bounded by two orbits with a radius of 144 and 193 million km, respectively, from the sun. The definition of the small and large orbits of the 'belt of life' follows from the high-temperature and low-temperature resistivity zones of living organisms. It is shown that Mars is located within the belt of life, however, the low-temperature resistivity orbit falls short of the mean Martian orbit by some 35.2 million km.

A74-18401 Optical function of human peripheral cones. W. H. Miller (Yale University, New Haven, Conn.) and A. W. Snyder (Australian National University, Canberra, Australia). Vision Research, vol. 13, Dec. 1973, p. 2185-2194. 20 refs. Grant No. NIH-EY-00089.

Investigation of the effects of the shapes and packing patterns of human photoreceptor cells upon photoreception. In particular, the attempt is made to explain why only the peripheral-cone outer segments are conical. A method is shown for determining the refractive index of outer segments from electronmicrographs and predict on the basis of previously published anatomical data the refractive indices of various classes of human outer segments. The obtained refractive index data in combination with the results of analyses of shapes and packing patterns are shown to suggest that human cones serve a dual role. They enhance the sensitivity of the rod system at scotopic levels in addition to mediating color vision at photopic intensities. This occurs because the conical outer segments of peripheral cones radiate all the light that is not absorbed by the cone visual pigment.

M.V.E.

A74-18402 Visual effects of sinusoidal components of complex gratings - Independent or additive. A. Partle (Wright State University, Dayton, Ohio). Vision Research, vol. 13, Dec. 1973, p. 2195-2204, 16 refs.

Modulation (contrast) thresholds for complex gratings comprised of two sinusoidal components were measured. The spatial frequency of one component was twice that of the second component. By comparing the thresholds for complex gratings with those for simple sinusoidal gratings, it was possible to determine the degree of additivity of the visual effects of the sinusoidal components of the complex gratings. Different degrees of component summation were observed depending upon the spatial frequency of the components and their drift speed across the retina. Some implications of the results for models of spatial information processing are discussed. (Author)

A74-18403 Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system. B. G. Bender (Imperial College of Science and Technology, London, England). Vision Research, vol. 13, Dec. 1973, p. 2205-2218. 26 refs. Research supported by the Science Research Council.

Spatial interactions in the visual system were studied psychophysically by measuring the effects of (1) subliminal annuli on the increment threshold of a central test spot and (2) suprathreshold annuli on the flicker threshold of a central test. Because previous evidence indicates that interactions of type (1) occur at a level before the optic chiasma, while those of type (2) occur more centrally, the present investigation was designed to test interactions at two levels in the visual system. The visual stimuli were selected to stimulate individual spectral classes of color mechanisms, and in particular interactions between red- and green-sensitive channels of foveal vision were investigated. For both types of measurement interactions between center and surround regions of receptive fields occurred only between like spectral response mechanisms, whereas interactions within the center of receptive fields also occurred between the different spectral mechanisms. (Author)

A74-18404 Latency functions in human vision. R. J. W. Mansfield (Harvard University, Cambridge, Mass.). Vision Research, vol. 13, Dec. 1973, p. 2219-2234. 35 refs. Research supported by the National Research Council and Medical Research Council of Canada.

A series of experiments determined how the latency of a dark-adapted observer's response varies with flash luminance and flash duration. Upon receipt of a flash, observers responded by releasing a contact switch. Latency varied as a power function of luminance with simple fractional exponents: an exponent of -1/3 for extended sources and an exponent of -1/2 for a point source. To a first approximation, the exponents were independent of flash duration, spectral composition, or retinal location. Both photopic and scotopic processes gave rise to latency functions with similar exponents. For brief flashes under all stimulus conditions examined, latency was determined by the stimulus energy contained in the first 10 msec of the flash independent of flash luminance level. The invariance of the period of temporal dependence indicates a linear process in latency determination. (Author)

A74-18405 Chromatic rod activity at mesopic intensities. U. Stabell and B. Stabell (Oslo, Universitetet, Oslo, Norway). Vision Research, vol. 13, Dec. 1973, p. 2255-2260. 18 refs. Research supported by Norges Almenvitenskapelige Forskningsrad.

When a green-blue scotopic stimulus is superimposed upon a deep red test light, the hue of the test light changes toward blue. For this reason it is considered that both rods and cones contribute a chromatic component at mesopic intensity levels. At variance with the hypothesis of rods as the color receptors of blue, the present work suggests that rods, both at scotopic and mesopic intensity levels, may initiate every hue of the spectrum, depending on the relative sensitivity of the spectrally opponent cells produced by the selective chromatic stimulation of cones.

(Author)

A74-18406 Detection of short time delays between photic stimuli by means of pattern induced flicker colors /PIFCs/. C. von Campenhausen (Köln, Universität, Cologne, West Germany). Vision Research, vol. 13, Dec. 1973, p. 2261-2272. 16 refs.

A74-18407 Stereoscopic aftereffects - Evidence for disparity specific neurones in the human visual system. D. E. Mitchell and A. G. Baker (Dalhousie University, Halifax, Canada). Vision Research, vol. 13, Dec. 1973, p. 2273-2288. 27 refs. National Research Council of Canada Grant No. APA-7660.

Following adaptation to a target imaged with a certain disparity the apparent depth of targets imaged with nearby disparities is altered. With simple stimuli (single lines) the maximum displacement occurs with adapting disparities of about 5 min, but adapting disparities exceeding 15 to 20 have no effect. On the other hand, following adaptation to a vertical grating, the apparent depth of a test grating is altered in a cyclical fashion with increasing adapting disparity, being displaced first in one direction and then the opposite with a period equal to twice the spatial period of the grating stimulus itself. Such periodic adaptation curves are found only if both test and adapting gratings are vertical. These psychophysical results are compared with the properties of disparity-specific neurones in the cat and monkey visual cortex. (Author)

A74-18408 Contributions of the primary chromatic mechanisms to the generation of visual evoked potentials. J. Krauskopf (Bell Telephone Laboratories, Inc., Murray Hill, N.J.). Vision Research, vol. 13, Dec. 1973, p. 2289-2298. 17 refs.

A74-18409 Spatial frequency phase effects in human vision. C. F. Stromeyer, III, A. F. Lange, and L. Ganz (Stanford University, Stanford, Calif.). Vision Research, vol. 13, Dec. 1973, p. 2345-2359, 36 refs. NSF Grant No. GB-1592.

Color aftereffects (McCollough effects) were generated specific to each member of a pair of vertical gratings which had identical frequency spectra but which differed in the phase angles between their frequency components. The pairs of gratings were either left-and right-facing sawtooth gratings or gratings comprised of the sum of two harmonics - first and second, first and third, or first and fourth. Color aftereffects were readily obtained with sawtooth gratings (which had sharp edges) and with patterns comprised of first and second harmonics; the effects were very weak with the first and third harmonic patterns and almost absent with the first and fourth harmonic patterns. The results suggest that there are phase-sensitive broadband mechanisms within the visual system and that each 'spatial frequency channel' cannot be simply represented by a single, symmetric line spread function. (Author)

A74-18410 Frequency spectrum of optokinetic nystagmus in the normal monkey. J. A. Valciukas, P. Pasik, and T. Pasik (Mount Sinai School of Medicine, New York, N.Y.). Vision Research, vol. 13, Dec. 1973, p. 2361-2368. 16 refs. Grants No. PHS-MH-02261; No. NIH-K3-EY-16865.

A74-18411 Some dynamic features of depth perception.
D. Regan and K. I. Beverley (Keele, University, Keele, Staffs., England). Vision Research, vol. 13, Dec. 1973, p. 2369-2379. 12 refs. Research supported by the Medical Research Council and Science Research Council.

Human ability of detecting the movements of an oscillating target was studied on a subject who used both eyes in viewing a fixation plane defined by a random dot pattern subtending a visual angle of 5 x 5 deg at a viewing distance of 75 cm. The upper half of the nonius line was seen by the left eye and the lower half by the right eye, both halves appearing as a single vertical line when both eyes converged correctly onto the fixation plane. When a stimulus was viewed with both eyes, two vertical black bars were seen aligned vertically one degree to either side of the central nonius line, the right hand bar oscillating in depth in front of, behind, or in the fixation plane, and the left hand bar standing in a static position in

depth in front of or behind the fixation plane. Disparity signals were found to affect the motion perception only when the oscillation frequency of a stimulus was below 1 Hz.

V.Z.

A74-18412 Evoked potentials specific to spatial patterns of luminance and colour. D. Regan (Keele, University, Keele, Staffs., England). Vision Research, vol. 13, Dec. 1973, p. 2381-2402. 72 refs. Research supported by the Medical Research Council.

Description of an experiment in which an attempt was made to identify and characterize the human brain's electrical response to changes in the color difference across chromatic-contrast borders. The amplitudes of evoked potentials (EPs) elicited by repetitively exchanging the positions of red and green checks in a checkerboard pattern are plotted vs the luminance of the green checks. The relative timing of different stimulus colors is discussed, as well as the effect of stimulus repetition frequency, the topographical distributions of luminance contrast and chromatic contrast EPs, the effect of chromatic aberration of the eye, and the relation between contrast, EP amplitude, and psychophysical threshold. It is argued that the observed EPs were determined by changes in stimulus contrast rather than by local changes in stimulus luminance.

A.B.K.

A74-18413 The dissociation of sideways movements from movements in depth - Psychophysics. D. Regan and K. I. Beverley (Keele, University, Keele, Staffs., England). Vision Research, vol. 13, Dec. 1973, p. 2403-2415. 17 refs. Research supported by the Medical Research Council and Science Research Council.

A74-18414 Perception of structure in flashes and in afterimages. R. W. Ditchburn and A. E. Drysdale (Reading, University, Reading, Berks., England). *Vision Research*, vol. 13, Dec. 1973, p. 2423-2433. 8 refs. Medical Research Council Grant No. G-968/392/C.

Experimental methods used and illustrative examples of results obtained in studies of structure perception in flashes and afterimages are reviewed, and some of the conclusions reached are discussed. The results obtained are in reasonably good agreement with recent measurements by other investigators.

M.V.E.

A74-18415 Visual information obtained from flashes and from afterimages. R. W. Ditchburn and A. E. Drysdale (Reading, University, Reading, Berks., England). Vision Research, vol. 13, Dec. 1973, p. 2435-2447. 22 refs. Medical Research Council Grant No. G-968/392/C.

A method of calculating the information gain when a grating target is discriminated against a featureless background is developed. This is extended to more general types of structure. The variation of the amount of information available in normal vision, in flashes, and in afterimages following flashes has been measured.

(Author)

A74-18416 Binocular masking level differences in sinusoidal grating detection. G. B. Henning (Physiological Laboratory, Cambridge, England) and B. G. Hertz (Pennsylvania, University, Philadelphia, Pa.). Vision Research, vol. 13, Dec. 1973, p. 2455-2463. 16 refs.

Observers were required to detect sinusoidal gratings in a background of noise composed of a narrow band of spatial frequencies centered on the frequency of the grating to be detected. The visual noise was identical in two fields, one for ech eye. The grating to be detected - the signal grating - was presented in one of two conditions: either the signal grating was identical in both fields or 180 deg out-of-phase; that is, with the dark bars in one field in locations corresponding to the locations for light bars in the other. Signal gratings of low spatial frequency presented out-of-phase were detected at much lower contrast than in-phase gratings. The difference is detectability with vertical gratings, approx. 0.6 log units of contrast, was at least as large with horizontal gratings. (Author)

A74-18417 Torsional eye movements and constancy of the visual field. A. P. Petrov and G. M. Zenkin (Akademiia Nauk SSSR, Institut Problem Peredachi Informatsii, Moscow, USSR).

Vision Research, vol. 13, Dec. 1973, p. 2465-2477. 32 refs.

Results of a study in which an attempt is made to test the hypothesis that the torsion saccades of eyes are an important part of mechanisms providing constancy of orientation perception. A study was made of eye movements during lateral head tilting, using a suction cap technique developed by Yarbus (1967). It is found that smooth tilts of the head to the shoulder cause two kinds of eye movements. The first is a slow rotation of the eye in the direction opposite to that of the head. During this phase the attitude of the eye with reference to the gravity vertical does not vary. The second kind of eye movement is a saccadic rotation about the visual axis in the direction of the head tilt. These two types of eye rotations correspond to the two mechanisms of orientation constancy in the visual system.

A.B.K.

A74-18418 \* A centre for accommodative vergence motor control. D. Wilson (California, University, Berkeley, Calif.). Vision Research, vol. 13, Dec. 1973, p. 2491-2503, 18 refs. NIH-NASA-supported research.

Latencies in accommodation, accommodative-vergence, and pupil-diameter responses to changing accommodation stimuli, as well as latencies in pupil response to light-intensity changes were measured. From the information obtained, a block diagram has been derived that uses the least number of blocks for representing the accommodation, accommodative-vergence, and pupil systems. The signal transmission delays over the various circuits of the model have been determined and compared to known experimental physiological-delay data. The results suggest the existence of a motor center that controls the accommodative vergence and is completely independent of the accommodation system.

M.V.E.

A74.18419 \* Noise coupling between accommodation and accommodative vergence. D. Wilson (California, University, Berkeley, Calif.). Vision Research, vol. 13, Dec. 1973, p. 2505-2513. 7 refs. NIH-NASA-supported research.

For monocular viewing, the fluctuations in accommodative lens power in the frequency range from 0.5 to 3 Hz were found to be considerably greater than those in accommodative vergence movements of the covered eye. Considering the close synkinesis between these motor responses for step changes or slow variations in accommodative stimulus, this finding is unexpected. This apparent lack of synkinesis is found to result mainly from the fact that the decrease in small-signal linear gain with increasing frequency is more rapid in the case of the accommodative vergence system than in the case of the accommodative vergence system than in the case of the accommodation system, rather than from some nonlinear phenomenon. (Author)

A74-18420 Composite adaptation and spatial frequency interactions. S. Stecher (Lehigh University, Bethlehem, Pa.), C. Sigel (Pennsylvania, University, Philadelphia, Pa.), and R. V. Lange (Brandeis University, Waltham, Mass.). Vision Research, vol. 13, Dec. 1973, p. 2527-2531. 9 refs. Grant No. NIH-EY-00023.

Consideration of the hypothesis that there are channels in the human visual system which are sensitive to luminance variations in limited ranges of spatial frequency. Studies are reviewed that were performed in order to gain an understanding of what sort of channel mechanisms would be required to be consistent with the variety of experiments which support the channel hypothesis in general but give conflicting details about channel properties. An observed effect is described that calls for modification of the channel hypothesis. This effect is related to the threshold elevation due to adaptation.

M.V.E.

A74-18421 The analysis of the drift rate of moving sinusoidal gratings. D. J. Tolhurst, C. R. Sharpe, and G. Hart (Physiological Laboratory, Cambridge, England). Vision Research, vol. 13, Dec. 1973, p. 2545-2555. 28 refs.

Evidence for velocity-specific channels in the human visual system was obtained by adapting to drifting sinusoidal gratings and determining the amount of threshold elevation at other drift rates.

The shape of the elevation curve depended on the adapting velocity but, surprisingly, it suggested that the channels had little high-velocity decline in sensitivity. Distinct thresholds for detecting the movement and the spatial structure of the stimulus were distinguished. These two thresholds were elevated independently by adaptation: the movement-threshold was affected only at velocities close to the adapting velocity, but the pattern-discrimination threshold was affected equally at all test velocities. It is suggested that there are two systems of channel: one analyses movement and is composed of velocity-specific units; the other analyses spatial structure and is not sub-divided into velocity-specific units. (Author)

A74-18422 Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli. E. J. Rinalducci, S. B. Lowenhaupt, and J. M. Martinez, II (Virginia, University, Charlottesville, Va.). Vision Research, vol. 13, Dec. 1973, p. 2557-2571. 36 refs. Grant No. NIH-EY-00353.

A74-18423 A method of changing the time pattern of a light stimulus without a temporal change in spectral composition. J. R. Jarvis (City University, London, England). Vision Research, vol. 13, Dec. 1973, p. 2575-2580. 8 refs.

A74-18424 Motion aftereffects following inspection of contrarotating stimuli. J. A. Woolsey and C. V. Newman (Birmingham, University, Birmingham, England). Vision Research, vol. 13, Dec. 1973, p. 2587-2589.

As a direct test of the hypothesis that counterbalancing mechanisms underwrite the aftereffect of movement, twenty subjects of both sexes were used for investigating the direction and duration of movement aftereffects following inspection of stimuli moving in opposite directions simultaneously. The results of this experiment confirm that a counterbalancing mechanism underwrites the aftereffect of movement.

M.V.E.

A74-18425 Colour-specificity and monocularity in the visual cortex. M. Coltheart (Reading, University, Reading, Berks., England). Vision Research, vol. 13, Dec. 1973, p. 2595-2598, 14 refs

The association between monocularity and color specificity is considered in the light of the recently expanded knowledge about the visual cortex. It is suggested that this association may be viewed as a natural, though accidental, consequence of the fact that there exists a stage in the visual system that is low enough in the system to retain some degree of color specificity, yet high enough to possess orientation specificity, though not high enough for binocularity to have replaced monocularity.

M.V.E.

A74-18426 Waveguide modes and light absorption in photoreceptors. A. W. Snyder and C. Pask (Australian National University, Canberra, Australia). Vision Research, vol. 13, Dec. 1973, p. 2605-2608, 10 refs.

Description of a simple and accurate method for determining the light absorbed from modes that propagate along photoreceptors or optical fibers of a cross section invariant throughout their length. This method avoids the necessity of solving the complex transcendental equation which Rohler and Fischer's (1971) approach involves. It also provides insight into the absorption process. Since many photoreceptors are not uniform throughout their length but are cone shaped, results for absorption in conical optical fibers are also presented.

M.V.E.

A74-18427 A figure of merit for visual colorimeters using spectral stimuli. P. W. Trezona (City University, London, England). Vision Research, vol. 13, Dec. 1973, p. 2609-2613. 5 refs. Research supported by the Science Research Council.

A74-18451 \* Determination of left ventricular size and shape. H. Sandler (NASA, Ames Research Center, Biomedical

Research Div., Moffett Field, Calif.) and E. Alderman (Stanford University, Stanford, Calif.). *Circulation Research*, vol. 34, Jan. 1974, p. 1-8. 87 refs.

Significant advances have occurred over the past 15 years in the ability to measure ventricular dimensions. Angiocardiography still remains the most reliable method for overall determination of chamber size and shape and serves as a standard for calibration or comparison for newer methods, Improvements in the use of radiographic methods over the next few years are anticipated with more extensive use of multiplane studies associated with repeated injections of improved contrast materials that produce fewer physiological effects or with substances that adhere to the endocardial surfaces. It is also anticipated that existing methods for automatically obtaining dimensional information from X rays will be continued and improved.

A74-18452 \* Role of the cerebellum and the vestibular apparatus in regulation of orthostatic reflexes in the cat. N. Doba and D. J. Reis (Cornell University, New York, N.Y.). Circulation Research, vol. 34, Jan. 1974, p. 9-18. 28 refs. Grants No. NIH-NS-04876; No. NGR-33-010-179.

The contribution of the fastigial nucleus and the vestibular nerves (eighth cranial nerves) to the orthostatic reflexes in anesthetized, paralyzed cats was studied. Bilateral lesions of the rostral fastigial nucleus resulted in impairment of the reflex changes in blood pressure, femoral arterial flow, and resistance evoked by head-up tilting to 30 deg or 60 deg. The rostral fastigial nucleus, which might be triggered by the vestibular apparatus, appears to participate in concert with the baroreceptors in the initiation and possibly the maintenance of the orthostatic reflexes.

F.R.L.

A74-18453 Effective compliance of the total vascular bed and the intrathoracic compartment derived from changes in central venous pressure induced by volume changes in man. M. Echt, J. Düweling, O. H. Gauer, and L. Lange (Berlin, Freie Universität, Berlin, West Germany). Circulation Research, vol. 34, Jan. 1974, p. 61-68, 23 refs, Contract No. F44620-71-C-0117.

A74-18557 Mixed venous-arterial difference of molecular nitrogen in man. H. Bachofen, H. P. Gurtner, and G. Paumgartner (Bern, Universität, Berne, Switzerland). *Journal of Applied Physiology*, vol. 35, Dec. 1973, p. 791, 792. 12 refs. Research supported by the Clark Joller Foundation and Schweizerischer Nationalfonds zur Förderung der Wissenschaflichen Forschung.

The mixed venous-arterial N2 difference was measured in 10 patients admitted to the hospital for cardiac catheterization. At rest, the average mixed venous-arterial N2 difference amounted to 2 plus or minus 4 mm Hg, and to 5 plus or minus 4 mm Hg during exercise. Additional measurements in five patients yielded mean mixed venous-arterial N2 difference of -1 plus or minus 3 mm Hg before, and 0 plus or minus 2 mm Hg after the infusion of a protein hydrolysate equivalent to 6 g of nitrogen. (Author)

A74-18558 Adrenergic beta-receptor blockade and metabolic response to centrifugation stress. M. H. Harrison (RAF, Institute of Aviation Medicine, Farnborough, Hants., England). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 793-797. 25 refs.

The metabolic effects of three short exposures to radial acceleration have been examined following administration of either a beta-blocking drug (oxprenolol) or a placebo, in a group of male subjects. Associated emotional stress was assessed by use of a line-marker technique and from changes in heart rate. On placebo, centrifugation significantly increased nonesterified fatty acids (NEFA) and glycerol levels, but had little effect on blood glucose or lactate levels. The drug effectively abolished the increase in NEFA, but had no effect on glycerol levels. Oxprenolol abolished the emotionally induced tachycardia observed during the control period preceding centrifugation but only partially abolished the tachycardia produced by centrifugation.

A74-18559 \* Competition between cutaneous vasodilator and vasoconstrictor reflexes in man. J. M. Johnson, M. Niederberger, L. B. Rowell, M. M. Eisman, and G. L. Brengelmann (Washington, University, Seattle, Wash.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 798-803. 28 refs. Grants No. NIH-HL-05889; No. NGR-48-002-082; No. NIH-RR-37.

A two-part experiment was carried out on seven men to determine whether skin will respond to increased neurogenic vasoconstrictor activity during heating. The latter was induced by lower body negative pressure of -50 mm Hg applied for 5 of each 15 min in 12 studies with constant, neutral skin temperature (32.2-34.4 C) in a 40-min control period and with skin temperature held at 38 C for 40-70 min. We conclude that during heating, skin retains the ability to vasoconstrict but that this vasoconstriction cannot completely override heat-induced vasodilatation. (Author)

A74-18560 Pressure-flow relationships in the isolated canine trachea. R. J. Knudson (Arizona, University, Tucson, Ariz.) and D. E. Knudson (Tucson Veterans Administration Hospital, Tucson, Ariz.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 804-812. 20 refs. Grants No. NIH-1-R01-HL-13869-01; No. NIH-HL-14136.

In a mechanical model simulating pressure and flow relationships which would exist under isovolume conditions in vivo, the relationship of flow through excised canine tracheas to driving pressure was examined as pressure was increased and decreased. The resulting tracheal pressure-flow (TPF) curves exhibited hysteresis which was related to the pressure-volume hysteresis of the trachea undergoing dynamic compression. The configuration of the TPF curves varied and appeared to be related to the relative width of the pars membranacea of the particular trachea studied. By varying the maximum driving pressure on successive trials, the TPF hysteresis could be demonstrated to be dependent upon pressure history.

(Author)

A74-18561 Influence of smoking and nicotine on cerebral blood flow and metabolic rate of oxygen in man. E. Skinhoj, J. Olesen, and O. B. Paulson (Bispebjerg Hospital, Copenhagen, Denmark). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 820-822. 8 refs. Research supported by the Council for Tobacco Research.

The effect of smoking and of comparative doses of nicotine applied intravenously upon cerebral hemodynamics and oxidative metabolism was studied in series of patients. Smoking as well as nicotine increased cerebral blood flow but decreased arterial-venous oxygen difference leaving the cerebral metabolic rate of oxygen unchanged. The conclusion is that smoking as well as nicotine has an effect upon cerebral vascular resistance either because of a direct action upon vascular smooth muscles or via the vegetative nervous system. Nicotine in the doses obtained by smoking does not change the rate of oxidative cerebral metabolism.

(Author)

A74-18562 Pulmonary capillary blood flow during normal spontaneous breathing in man. H. R. Astrom, K.-H. Lin, and M. B. McIlroy (California, University, San Francisco, Calif.). *Journal of Applied Physiology*, vol. 35, Dec. 1973, p. 823-829. 27 refs. Grant No. NIH-HL-06285.

Pulmonary capillary blood flow was measured in man during normal spontaneous breathing by the N2O-body plethysmograph technique. Respiratory artifacts were minimized by rebreathing warmed and wetted gas and measurements throughout the respiratory cycle were made possible. The mean and peak systolic blood flow, stroke volume, and mean systolic acceleration, measured at the pulmonary capillary level, all were directly and approximately linearly related to intrapleural pressure. The range of variation in each of these related variables during a normal tidal breath was approximately plus or minus 25% around the mean level for one complete respiratory cycle. (Author)

A74-18563 Histamine-induced pulmonary vasodilatation in the calf - Relationship to hypoxia. E. D. Silove (Institute of Child Health, London, England) and A. J. Simcha (Haddassah Medical Centre, Jerusalem, Israel). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 830-836. 16 refs. Research supported by the British Heart Foundation.

The reactive pulmonary vasculature of the neonatal calf was utilized to assess whether histamine is important in mediating the pulmonary vasoconstrictive response to hypoxia. Hypoxia consistently produced pulmonary vasoconstriction. Histamine produced pulmonary vasoconstriction. Histamine produced pulmonary vasoconstriction when infused hypoxia, and it prevented hypoxic vasoconstriction when infused slowly into the perfused pulmonary artery. (Author)

A74-18564 Dynamics of the respiratory controller during carotid body hypoxia. R. E. Dutton, E. J. Smith, P. K. Ghatak, and D. G. Davies (Union University, Albany; Rensselaer Polytechnic Institute, Troy, N.Y.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 844-850. 31 refs. Grant No. PHS-HL-12564.

Step, ramp, pulse, and pulse train hypoxic forcing functions were generated at the carotid bodies of 24 anesthetized dogs by means of carotid artery loops and a perfusion system. All perfusion patterns at mean arterial oxygen pressure between 32 and 44 mm Hg except ramp functions resulted in an abrupt increase in mean tidal volume within the 1st sec of perfusion, followed by an increased frequency of respiration and decrease from peak tidal volume over the next 4 sec. These initial large tidal volumes occur too rapidly to be accounted for by any known level of neural activity in the sinus nerves. The transient response of the respiratory controller to hypoxia contains linear dynamics, but also contains nonlinearities in the form of unidirectional rate sensitivity and a hold circuit.

(Author)

A74-18565 Venous reactivity during static exercise /hand-grip/ in man. R. G. Seaman, R. L. Wiley, F. W. Zechman, and J. A. Goldey (Miami University, Oxford, Ohio; Kentucky, University, Lexington, Ky.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 858-860. 15 refs.

Normal adult male volunteers in the supine position were studied to assess the effect of forearm static exercise on limb venomotor tone. Two methods were employed to measure venous tone. Volume changes of the calf were measured plethysmographically, and pressure changes in the nonexercising forearm were measured with the Wallace isolated limb technique. Venous filling decreased and venous pressure increased during static exercise as compared to control. The results from both methods showed that there is a statistically significant increase in limb venomotor tone during static exercise.

(Author)

A74-18566 Accurate determination of O2 dissociation curve of human blood above 98.7% saturation with data on O2 solubility in unmodified human blood from 0 to 37 C. F. J. W. Roughton and J. W. Severinghaus (California, University, San Francisco, Calif.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 861-869. 31 refs. Grants No. PHS-HL-6285; No. PHS-GM-15571; No. PHS-5-KG-HL-19412.

A74-18567 Cardiopulmonary baroreflexes - Integrated responses to sine- and square-wave forcing. T. C. Lloyd, Jr. (Indiana University, Indianapolis, Ind.), *Journal of Applied Physiology*, vol. 35, Dec. 1973, p. 870-874, 10 refs. Grant No. PHS-06308.

Cardiopulmonary baroreflexes, in conjunction with secondary systemic baroreflexes, modulate systemic vascular resistance in response to left atrial pressure changes. In this multicomponent control system, feedback normally is provided through left ventricular end-diastolic pressure and/or systemic venous return. This baroreflex system was studied in dogs under open-loop conditions imposed by biventricular bypass perfusion. Square-wave and sinusoidal changes in left atrial pressure were used as the system forcing

functions. The effect of a single square-wave input pulse was to cause a transient fall of systemic resistance followed by a quasi-steady plateau. With sinusoidal forcing, the evoked change in systemic arterial pressure was directly related to cardiopulmonary forcing pressure amplitude and variably related to forcing frequency.

(Author)

A74-18568 Predicting effects of heat acclimatization on heart rate and rectal temperature. B. Givoni and R. F. Goldman (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 875-879. 9 references.

This paper develops a general model describing the changes in heart rate and rectal temperature, as a function of days of exposure to work in the heat, for any temperature and humidity combination. The model describes three components of the effects of heat acclimatization: (1) a decrease in the initial level of rectal temperature with acclimatization; (2) a decrease in the equilibrium level which rectal temperature and heart rate approach with work; and (3) a widening gap between nonacclimatized and fully acclimatized subjects with duration of work in heat with respect to both responses. (Author)

A74-18569 Resting metabolism and thermoregulation in the unrestrained rabbit. G. N. McEwen, Jr. and J. E. Heath (Illinois, University, Urbana, Ill.). *Journal of Applied Physiology*, vol. 35, Dec. 1973, p. 884-886, 11 refs, NSF Grant No. GB-13797.

Resting metabolism (M) was measured in New Zealand white rabbits at ambient temperatures of 0, 10, 20, and 30 C. In unrestrained and trained rabbits, values of M were lower than previously reported for restrained rabbits. Calculated heat loss coefficient and lower critical temperature were also lower than previously reported. Rabbits show three postures dependent on the ambient temperature: the relaxed/alert posture at 20 C, the ball posture at 0 and 10 C, and the spread posture at 30 C. (Author)

A74-18570 Effects of exercise on adrenocortical function. C. T. M. Davies and J. D. Few (London School of Hygiene and Tropical Medicine, London, England). *Journal of Applied Physiology*, vol. 35, Dec. 1973, p. 887-891.

Ten subjects exercised on a motor-driven treadmill at work loads varying from 36 to 90% of their maximum aerobic power. Plasma cortisol (F), cardiac frequency, tympanic temperature, and oxygen intake were measured during rest, exercise, and recovery periods. Analysis of all the data suggests that at work levels below about 50% of maximum aerobic power, F usually decreased and that before F began to rise a critical level of about 60% of the subject's maximum aerobic power had to be exceeded. (Author)

A74-18571 Dynamic respiratory response to abrupt change of inspired CO2 at normal and high oxygen pressure. R. Gelfand and C. J. Lambertsen (Pennsylvania, University, Philadelphia, Pa.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 903-913. 46 refs. Grants No. NIH-HE-08184; No. NIH-HE-08899; Contract No. Nonr-551(14).

Breath-by-breath measurements of the respiratory tidal volume, frequency, and minute volume transients which resulted when 6% CO2 was abruptly added to and subsequently abruptly removed from inspired gas were obtained in 14 experiments on a single intensively studied human subject. Analysis of these measurements established that it is possible to identify and quantitatively characterize the dynamic response characteristics of two central nervous system respiratory receptor components in addition to that of peripheral chemoreceptors. The same three components of respiratory response to CO2 were found in studies on three additional men. (Author)

A74-18572 A simple, accurate technique for predicting maximal aerobic power. E. L. Fox {Ohio State University, Columbus, Ohio}. Journal of Applied Physiology, vol. 35, Dec. 1973, p.

914-916, 17 refs, Contract No. DA-49-193-MD-2741.

A technique for predicting maximal aerobic power was developed from data gathered on 87 healthy, untrained college males. Prediction is based on a linear equation relating maximal aerobic power (open-circuit spirometry) to submaximal heart rate recorded (via ECG) during the 5th min of bicycle exercise at 150 W. (Author)

A74-18573 End-tidal oxygen analysis using a synchronous pulse generator. V. O. Roberson, R. Harry, H. Hsiao, and T. Barnett (North Carolina, University, Chapel Hill, N.C.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 922-924. 10 refs.

A relatively simple method for the analysis of end-tidal oxygen has been developed using a synchronous pulse generator. Continuously monitored end-tidal CO2 is used as a signal to activate repetitively a sampling device which isolates and measures oxygen tension. One hundred-twenty observations were made in which steady state end-tidal O2 was compared to alveolar oxygen pressure calculated from a modification of the Bohr formula. There was close agreement between the calculated alveolar oxygen pressure and the measured end-tidal oxygen pressure and there was essentially no difference between end-tidal samples measured under normal conditions and conditions of increased airway resistance. The response time, limitations, and applications of this system are discussed. (Author)

A74-18574 Measuring body temperature by telemetry using a removable probe in an implanted cannula. B. W. Mitchell and H. S. Siegel (U.S. Department of Agriculture, Southeast Poultry Research Laboratory, Athens, Ga.). Journal of Applied Physiology, vol. 35, Dec. 1973, p. 925-927. 9 refs.

An FM radio telemetry transmitter for deep body temperature measurements accurate to within 0.1 C was developed by coupling an AM temperature transmitter to an FM biopotential transmitter. An implantable cannula, developed for use with the composite FM temperature transmitter, allowed the single transmitter and temperature probe to be used to monitor body temperature of chickens heated individually in stress tests. A cannula was implanted in each chicken. The probe was then inserted into the cannula of the individual chicken being tested. Use of the implanted cannula eliminated the necessity of implanting sensors in each chicken and the problem of body fluid leakage associated with implanted probes.

(Author)

A74-18575 Water vapor corrections in oxygen consumption calculations. W. L. Beaver (Varian Associates, Palo Alto, Calif.). *Journal of Applied Physiology*, vol. 35, Dec. 1973, p. 928-931. 8 refs.

Calculations of oxygen consumption based on instantaneously measuring gas analyzers will be in error if the water vapor content of the expired gas is neglected. A method is derived and a nomogram is presented to permit water vapor to be taken into account. It is shown that water vapor in the measured sample of expirate has a significant effect on the oxygen consumption determination by the open circuit method. Neglecting to take this factor into account is shown to lead to a 25% error in a typical case. (Author)

A74-18594 # Possible adsorption analog systems for modeling the processes in a fiving organism (O vozmozhnykh adsorbtsionnykh analogovykh sistemakh, modeliruiushchikh protsessy v zhivom organizme). V. F. Kiselev (Moskovskii Gosudarstvennyi Universitet, Moscow, USSR). Akademiia Nauk SSSR, Doklady, vol. 213, Nov. 1, 1973, p. 224-227. 16 refs. In Russian.

A74-18595 # Numerical computer data on functional connections and phase shifts in the tension rhythm of the cortical and hypothalamic zones during the formation of a pain stress (Dannye ETsVM o razlichnykh funktsional'nykh sviaziakh i fazovykh sdvigakh ritma napriazheniia proektsionnykh zon kory i gipotalamusa pri formirovanii bolevogo stressa). A. M. Mamedov (Aka-

demiia Meditsinskikh Nauk SSSR, Moscow, USSR). Akademiia Nauk SSSR, Doklady, vol. 213, Nov. 1, 1973, p. 242-245. In Russian.

A74-18621 Elevator illusion - Influences of otolith organ activity and neck proprioception. M. M. Cohen (U.S. Navy, Naval Air Development Center, Warminster, Pa.). Perception and Psychophysics, vol. 14, Dec. 1973, p. 401-406. 25 refs. Navy-supported research. Navy Project ZR0000101.

In the investigation reported it was tried to separate the effects of neck proprioception and otolith organ activity in the elevator illusion. The assumption is made that neck proprioception is altered when the head is pitched with respect to the trunk. It is also assumed that the activity of the otolith organs is altered either when the orientation of the otolith organs is changed with respect to the gravitational-inertial forces (GIFs) or, for most orientations of the head, when the magnitude of the GIFs is changed. A study is conducted of the illusion produced by four magnitudes of GIFs with the head oriented in each of three positions.

G.R.

A74-18622 Visual imagery differences and eye movements in the recall of pictures. D. F. Marks (Otago, University, Dunedin, New Zealand). *Perception and Psychophysics*, vol. 14, Dec. 1973, p. 407-412, 42 refs.

Groups of vivid and poor visualizers were given a picture memory task, and horizontal and vertical components of the electro-oculogram were recorded. This allowed a detailed investigation of each S's eye movements in the perception, imagery, and recall phases of the task. The vivid visualizers gave a higher accuracy of recall. Eye movement rate was lower in visual imagery than it was in perception, especially in the group of vivid visualizers. There was some evidence of scanning activity prior to recall, but only if positional cues were provided or if recall was incorrect. No scanning occurred prior to accurate recall unprompted by a positional cue. These results provide no support to the theories of image construction proposed by Hebb (1949, 1968) and Neisser (1967). As suggested by Singer (1966), an absence of eye movement may be a necessary condition for vivid visual imagery. (Author)

A74-18623 The effects of stimulus structure and familiarity on same-different comparison. H. S. Hock (Florida Atlantic University, Boca Raton, Fla.). Perception and Psychophysics, vol. 14, Dec. 1973, p. 413-420, 15 refs. Navy-supported research.

The same-different comparison task involves the measurement of reaction times for 'same' and 'different' responses to pairs of simultaneously (or sequentially) presented stimuli. The possibility is explored that two fundamentally different processes underlie 'same' and 'different' comparison. It is predicted that symmetry would affect reaction times for 'same' but not for 'different' responses. This would support the hypothesis that 'same' comparison is based on structural processes, while 'different' comparison is based on analytic processes.

G.R.

A74-18624 Bloch's law and a temporal integration model for simple reaction time to light. J. D. Hildreth. *Perception and Psychophysics*, vol. 14, Dec. 1973, p. 421-432. 26 refs. NIH-supported research.

An investigation has been conducted to answer questions concerning the validity of Bloch's law (BL) in the case of reaction times (RTs) to suprathreshold light stimuli. It is pointed out that earlier research on this subject had been limited to three studies of which two had concluded that BL did not, in general hold for RTs. The new studies reported, on the other hand, indicate the opposite. For the limited range of luminances investigated, BL was valid to a very good approximation. The results of the experiments can be represented by a simple mathematical model.

G.R.

A74-18625 Retention of time information in forcedchoice duration discrimination. R. M. Carbotte (McMaster University, Hamilton, Ontario, Canada). Perception and Psychophysics, vol. 14, Dec. 1973, p. 440-444. 9 refs. National Research Council of Canada Grant No. A-7919.

The investigation conducted shows that a large improvement in performance occurs as the interstimulus interval (ISI) is increased from 0 to 1/2 sec. There is, however, relatively little further change in the performance as the ISI changes from 1/2 to 2 sec. In general, performance is disrupted when the ISI is made very short. Aspects of single-stimulus performance are also explored.

G.R.

A74-18626 The role of gravitational cues in the judgment of visual orientation. W. B. Templeton (York University, Toronto, Canada). Perception and Psychophysics, vol. 14, Dec. 1973, p. 451-457, 30 refs. National Research Council Grant No. APA-299.

It is argued that, contrary to the views of some theorists, the role of gravitational cues is essentially one of maintaining orientation constancy. In support of this claim, it is shown that the loss of relevant gravitational information when the body is supine results in a significant increase in the disorienting effects of both a tilted visual frame and tilt of the head relative to the trunk. (Author)

A74-18627 The constancy of object orientation - Compensation for ocular rotation, S. M. Ebenholtz and K. R. Paap (Wisconsin, University, Madison, Wis.). Perception and Psychophysics, vol. 14, Dec. 1973, p. 458-470. 14 refs. Grant No. NIH-MH-13006.

When a thin horizontal line is displaced, either left or right of straight ahead, or when a vertical line is displaced up or down, systematic changes occur in the binocular disparity associated with the target. In three experiments, subjects matched the orientation of displaced targets with a variable comparison line. Estimates of apparent displacement with a pointing technique were also made. Since head position was fixed, apparent displacement was mediated by the angle of ocular rotation. Near perfect matches were made with vertical targets, but horizontal targets produced errors suggestive of underestimation of apparent displacement. However, the pointing data did not yield clear evidence for this view. Control data denied the possible role of the induced effect in matching the horizontal targets, and the results are discussed in the context of orientation constancy based upon compensation for displacement.

(Author

A74-18628 On energy-dependent cues in duration discrimination. R. M. Carbotte and A. B. Kristofferson (McMaster University, Hamilton, Ontario, Canada). *Perception and Psychophysics*, vol. 14, Dec. 1973, p. 501-505. 16 refs. National Research Council of Canada Grant No. A-7919.

The studies reported indicate that, although there is an improvement in performance as the marker intensity is increased over a fairly wide range, the change in performance is small. In the investigation, a low intensity was chosen to have signals which would be detected by the object on each presentation. It was intended to avoid problems regarding the detectability of the boundaries of the intervals.

G.R.

A74-18629 Hand-eye coordination - The role of 'motor memory.' R. W. Angel (Stanford University, Stanford and Palo Alto, Calif.), M. Wesley (Stanford University, Palo Alto, Calif.), and M. Hollander. Perception and Psychophysics, vol. 14, Dec. 1973, p. 506-510, 11 refs.

An investigation was conducted to obtain normative data concerning the effect of hand movement on subsequent oculomotor performance. It appears that the effect of hand movement on visual tracking may tend to decrease as a function of time. The experiment reported was an attempt to define the time course of that effect. The independent variable was the delay between hand and target movement, and the dependent variable was the relative frequency of saccades.

G.R.

A74-18630 Brightness selectivity in the motion aftereffect. R. Over and J. Broerse (Queensland, University, St. Lucia, Australia). Perception and Psychophysics, vol. 14, Dec. 1973, p. 542-546, 21 refs.

Eighteen Ss were required to track the apparent motion of a stationary grating viewed after prolonged inspection of a moving grating. Measures were obtained with the inspection and test gratings identical in contrast but different in space-average luminance, or with luminance held constant and contrast varied. The aftereffect was reduced as 'the gratings differed in space-average luminance, but contrast exerted less uniform influence as a variable. Brightness-selectivity in the motion aftereffect is interpreted within the selective adaptation model of aftereffects as evidence that some detectors in human vision are conjointly tuned to space-average luminance and image motion. (Author)

A74-18631 Temporal summation related to the nature of the proximal stimulus for the warmth sense. L. E. Marks (John B. Pierce Foundation, New Haven, Conn.) and J. C. Stevens (Yale University, New Haven, Conn.). Perception and Psychophysics, vol. 14, Dec. 1973, p. 570-576. 16 refs. Grant No. AF-AFOSR-70-1950.

The psychophysical functions for warmth are considered together with aspects of warmth as a function of duration, the intensity time reciprocity in the warmth sense, and questions of temporal summation related to temperature changes at the skin surface and within the skin. Characteristics of the proximal stirnulus for warmth sensation are also explored, giving attention to the significance of the difference between two temperatures and questions of the consistency of the test results with a hypothesis of adaptation.

G.R.

A74-18678 # Medical progress from aerospace research. F. T. Wooten (Research Triangle Institute, Research Triangle Park, N.C.). American Institute of Aeronautics and Astronautics, Annual Meeting and Technical Display, 10th, Washington, D.C., Jan. 28-30, 1974, Paper 74-276. 5 p. Members, \$1.50; nonmembers, \$2.00.

A program is discussed which is designed to find second applications in the field of medicine for the aerospace technology which was necessary to achieve the nation's space goals. Using a multidisciplinary team of engineers and scientists, medical research problems are identified by personal interaction between the team and scientists in medical centers throughout the country. The methodology used by the team is discussed, as well as specific examples of the success of this program.

F.R.L.

A74-18854 \* # Electrophoresis in space at zero gravity. M. Bier and R. S. Snyder (NASA, Marshall Space Flight Center, Astronautics Laboratory, Huntsville, Ala.), American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 12th, Washington, D.C., Jan. 30-Feb. 1, 1974, Paper 74-210. 6 p. 12 refs. Members, \$1.50; nonmembers, \$2.00. Contract No. NAS8-29566.

Early planning for manufacturing operations in space include the use of electrophoresis for purification and separation of biological materials. Greatly simplified electrophoresis apparatus have been flown in the Apollo 14 and 16 missions to test the possibility of stable liquid systems in orbit. Additionally, isoelectric focusing and isotachophoresis are of particular interest as they offer very high resolution and have self-sharpening boundaries. The value of possible space electrophoresis is substantial. For example, present technology permits large fractionation of only a few of blood proteins many fractions, and separated cell populations are needed for research. (Author)

A74-18930 Experimental investigation of visual image recognition characteristics. V. A. Avtonomova and Iu. M. Kholodilov. (Avtomatika i Telemekhanika, Aug. 1973, p. 161-165.) Automation and Bemote Control, vol. 34, no. 8, Jan. 15, 1974, pt. 2, p. 1342-1346. 6 refs. Translation.

An experiment is described on human recognition of noiseblurred images. The obtained results indicate that the empirical probabilities of recognition differ from the potential probabilities arrived at by statistical analysis. A74-18933 On one method of approximation of processes in uniform biological structures. V. M. Alekseev, A. V. Kochergin, and V. M. El'iasberg. (Avtomatika i Telemekhanika, Aug. 1973, p. 52-61.) Automation and Remote Control, vol. 34, no. 8, Jan. 1974, pt. 1, p. 1244-1253. 7 refs. Translation.

A mathematical model of a tonic muscle of a crustacean is considered. The dependence of the strain of each muscle fiber on the impulse inflow from motoneurons is described by a nonlinear differential operator containing parameters that vary from fiber to fiber. A formulation and solution are presented for the problem of approximating the operator that can describe the total muscle strain by means of an 'averaged-fiber' operator.

M.V.E.

A74-19010. A computer simulation of the otolith membrane. W. J. Hudetz (California State College, Fullerton, Calif.). Computers in Biology and Medicine, vol. 3, Dec. 1973, p. 355-369.

A model of the otolith membrane of the macula utriculi is described. A thin elastic membrane with a fixed boundary closely matching the shape of the otolith membrane in man is used as the model. The distributed loading of the membrane reflects the characteristic otokonial ridge which together with the corresponding thickening of the otolith membrane (the striola) is believed to have special significance in otolith functions. The parameters of the membrane are the modulus of elasticity. Poisson's ratio, and the specific density of the otokonia. Finite difference methods were used to simulate the membrane model on the digital computer. The possible modes of deformation of the membrane were studied under static conditions. The parameters of the model were adjusted to obtain a response comparable with experimental findings.

A74-19011 Application of the 'Hopscotch' algorithm for solving the heat flow equation for the human body. A. R. Atkins (Chamber of Mines Research Organization, Johannesburg, Republic of South Africa). Computers in Biology and Medicine, vol. 3, Dec. 1973, p. 397-405, 18 refs.

A74-19012 Computer reduction and analysis of neurophysiological data with special emphasis on evoked potential frequency analysis. G. W. Lewis (U.S. Army, Medical Research Laboratory, Fort Knox, Ky.). Computers in Biology and Medicine, vol. 3, Dec. 1973, p. 427-436. 24 refs.

A hardware and software system is described for the acquisition, reduction and analysis of neurophysiological data. Application pertains to EEG and EEG-derived evoked potential records. Determination is made of frequency component information in the records using a Fast Fourier Transform algorithm. The frequency information is represented as power spectra estimates (PSE), which are later selected, averaged and input to a multivariate discriminant statistical package. Control of the software system is made via remote terminal and acoustic coupler, allowing the use of off-site computer support. Sample results are provided. (Author)

A74-19038 \* Digital computer analysis of circulatory and respiratory pressures in water-immersed dogs breathing liquid in force environments of 1 and 7 Gy. D. J. Sass, A. C. Nolan, and E. H. Wood (Mayo Clinic and Mayo Foundation, Rochester, Minn.). Aerospace Medicine, vol. 45, Jan. 1974, p. 1-11. Research supported by the American Heart Association and U.S. Navy; Grants No. NGR-24-003-001; No. NIH-HL-3532; No. NIH-FR-7; Contract No. F41609-69-C-0058.

A74-19039 Inert gas washout in rats - Enhancement by Ruorocarbon infusion, Y. Cassuto, S. A. Nunneley, and L. E. Farhi (New York, State University, Buffalo, N.Y.). Aerospace Medicine, vol. 45, Jan. 1974, p. 12-14. 6 refs. Contract No. N00014-68-A-0216, NR Project 101-722.

Fluorocarbon (FC) compounds are inert and show high N2 solubility. Experiments tested whether FC infusion would increase N2 removal (VN2) from subcutaneous air pockets in rats, FC

emulsion was injected so that FC constituted about 12% of blood volume in treated animals. VN2 was measured under three conditions: 20 hrs in air, and 20 hrs or 5 hrs in 100% O2. Infused rats showed VN2 increases over controls of 175%, 148%, and 124% under the three conditions, respectively. (Author)

A74-19040 # Forearm amino acid metabolism during chronic physical inactivity. J. P. Ellis, Jr., F. R. Lecocq, J. B. Garcia, Jr., and R. L. Lipman (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). Aerospace Medicine, vol. 45, Jan. 1974, p. 15-18. 7 refs.

The effect of 14 days of physical inactivity on peripheral amino acid metabolism was determined on a group of five healthy male subjects ranging in age from 18 to 20 years. Blood samples were drawn from the right brachial artery and a left brachial vein during the control period of 2 weeks and on the 14th day of bed rest. None of the 19 amino acids analyzed showed a significant change, either in uptake or release, from the forearm muscles. However, a substantially higher level of alanine was found in both arterial and venous blood of the physically deconditioned subjects. (Author)

A74-19041 # Influence of ethanol on cardiovascular tolerance to +Gz acceleration. J. W. Burns (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). Aerospace Medicine, vol. 45, Jan. 1974, p. 19-28, 34 refs.

The combined stresses of acceleration and alcohol were investigated in the closed-chest chloralose anesthetized dog. Control responses to 30-sec rapid onset (1 G/sec) +Gz acceleration profiles were established in each animal, followed by the intraperitoneal administration of 2 gm/kg of 95% ethanol in a 40% solution. The animals were then reexposed to the same acceleration profiles at 1 and 2 hrs after ethanol administration. The data demonstrate a significant decrease in +Gz acceleration tolerance at 1 and 2 hrs after ethanol resulting from peripheral vasodilation and a decrease in the effective blood volume. (Author)

A74-19042 Effect of disulfiram on oxygen toxicity in beagle dogs. M. D. Faiman, R. J. Nolan, and F. W. Oehme (Kansas, University, Lawrence, Kan.). Aerospace Medicine, vol. 45, Jan. 1974, p. 29-32, 16 refs. Grant No. NIH-NS-07797; Contract No. N00014-70-A-0357-0002.

The protection of beagle dogs with disulfiram from high oxygen pressure convulsions and lung damage was investigated. Disulfiram was administered in a dose of 200 mg/kg ip, to both male and female beagle dogs, and the dogs exposed to 4 atmospheres of 100% oxygen. Dogs not previously treated with disulfiram convulsed within 10 min, whereas disulfiram-treated beagle dogs experienced no convulsions or other signs of oxygen toxicity. Also, no oxygen-induced lung damage, such as atelectasis, edema or hemorrhage, was found in disulfiram-treated animals. Disulfiram appears to be an excellent agent for use as a protectant against oxygen toxicity in beagle dogs.

A74-19043 # Assessment of performance in a link GAT-1 flight simulator at three alcohol dose levels. P. H. Henry, J. A. Flueck, J. F. Sanford, H. N. Keiser, R. C. McNee, W. H. Walter, III, K. H. Webster, B. O. Hartman, and M. C. Lancaster (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). Aerospace Medicine, vol. 45, Jan. 1974, p. 33-44. 20 refs.

To evaluate the effects of drugs and environmental stresses on pilot psychomotor performance, an automated system was developed around a Link GAT-1 flight trainer. Performance was electronically scored during 1-hr simulations of cross-country instrument flight, using special purpose analog and digital logic. The sensitivity of this system was assessed by observing the acute effects of three graded doses, 0.3, 0.6, and 0.9 gm/kg body weight, of ethyl alcohol on scored performance. Three separate experiments were conducted

using a total of 22 nonrated men, ages 21 to 29. Statistically significant performance decrements were observed at all three dose levels. (Author)

A74-19044 Influence of fitness on the blood pressure control system in man. J. Stegemann, A. Busert, and D. Brock (Köln, Deutsche Sporthochschule, Cologne, West Germany). Aerospace Medicine, vol. 45, Jan. 1974, p. 45-48. 15 refs. Research supported by the Deutsche Forschungsgemeinschaft.

In 25 endurance-trained athletes and a control group of 25 nonathletes, the blood pressure control system was tested. This was performed by changing the transmural pressure in the carotid artery using a sealed pressure chamber around the head while respiring air under atmospheric conditions. The pressure inside the chamber was altered from -60 to +60 mm Hg. Heart rate and peripheral blood pressure were recorded. The relationship between transmural pressure in the carotid artery and mean arterial blood pressure was significantly flatter in the athletes. The calculated gain factors were found to be remarkably smaller for athletes. Endurance training obviously reduces the effectiveness of the blood pressure control system. This is advantageous for the integrative control of the circulatory system during exercise and disadvantageous for orthostatic tolerance, especially after stress.

(Author)

A74-19045 Changes in blood and plasma volumes in dogs during decompression sickness. A. A. Bove, J. M. Hallenbeck, and D. H. Elliott (National Naval Medical Center, Bethesda, Md.). *Aerospace Medicine*, vol. 45, Jan. 1974, p. 49-55. 29 refs, Navy-supported research.

Plasma and red cell volumes were measured using isotope labelling in 12 dogs given various types of decompression from 220 foot air dives. A 25- to 30-min dive produced a limb bend, and a 35- to 40-min dive produced a spinal cord lesion (paresis). A short dive to 70-90 ft following the 220-ft dive was used to prevent severe chokes and cardiopulmonary collapse. Four dogs making safe dives (no decompression sickness) and four dogs with limb bends showed no change in blood, RBC, or plasma volumes, while four dogs with paretic dives showed loss of plasma and elevated hematocrit.

(Author)

A74-19046 Relationships between age, ATC experience, and job ratings of terminal area traffic controllers. J. J. Mathews and B. B. Cobb (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). Aerospace Medicine, vol. 45, Jan. 1974, p. 56-60. 9 refs.

This study involved the collection of experimental ratings of job performance and other data for several hundred journeymen radar control specialists of 17 high-IFR-traffic density Terminal Area Traffic Control facilities. Significant inverse relationships were found between the job ratings and both chronological age and tenure in FAA-ATC work. Results of a comparative analysis of data for dichotomized groups aged 40 and younger and 41 and older within each of several length-of-experience groupings indicated that: (1) the younger subjects of every experience level tended to receive higher evaluations than those over 40 years old and (2) the greater mean differences pertained to the dichotomized age groups having more than 10 years experience. (Author)

A74-19047 # Asymptomatic sinus disease in aircraw members. H. H. Hanna (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). Aerospace Medicine, vol. 45, Jan. 1974, p. 77-81.

In 1963-64, Fascenelli et al. established that a routine Water's view on asymptomatic individuals will reveal a significant percentage (25%) of abnormal findings, usually in the maxillary sinus. From June, 1967, to March, 1973, a similar study was carried out to corroborate their findings, particularly the incidence and usual course of cystic lesions in flyers and nonflyers. In the study group of 1,284 asymptomatic flyers there were 200 abnormalities for an incidence of 15.6%; in the control group of 200 nonflyers there were

44 abnormal findings for an incidence of 22%. The maxillary sinus was the site in all but eight individuals and the retention cyst was the most common abnormality in both groups.

(Author)

A74-19048 Note regarding the high-altitude symptomatology of short-term residents at 1600m following transport to 4300m altitude, D. A. Stamper, P. C. Weiser, and F. J. Sullivan (U.S. Army, Medical Research and Nutrition Laboratory, Denver, Colo.). Aerospace Medicine, vol. 45, Jan. 1974, p. 84, 85.

A74-19049 Myocardial infarction - An in-flight problem.
R. B. Rayman (USAF, Air Force Inspection and Safety Center, North AFB, Calif.). Aerospace Medicine, vol. 45, Jan. 1974, p. 86.89

During the 10-year period Jan. 1, 1962 to Dec. 31, 1971, only two cases of confirmed and five cases of suspected in-flight myocardial infarction were reported in the United States Air Force (USAF). One might next inquire about those accidents in which the primary cause was undetermined. Could the pilot possibly have suffered a myocardial infarction and subsequent incapacitation resulting in a fatal crash. In an attempt to answer this question, all accidents during the above time period in which the primary cause was undetermined were reviewed. The aircraft type, phase of flight of the accident, pilot age, and autopsy report were considered. It was concluded that in-flight myocardial infarction has been a rare event in the USAF.

A74-19050 # Electroencephalogram and aerospace safety. W. H. King and E. Liske (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). (International Congress of Aviation and Space Medicine, 21st, Munich, West Germany, Sept. 18, 1973.) Aerospace Medicine, vol. 45, Jan. 1974, p. 90, 91. 5 refs.

The significance of abnormal EEG findings in asymptomatic individuals is not well defined. The USAF School of Aerospace Medicine has undertaken a followup study of 30 candidates for special aerospace missions, who were found to have abnormal EEG findings, during the period 1961-1965. Interest was generated by the report of an overt seizure disorder in one individual. The survey has disclosed the occurrence of two (probably three) fatal aircraft accidents, one fatal automobile accident, two nonfatal aircraft accidents, and three aircraft incidents, involving members of the group. Implications with regard to physical standards for aircrew members are discussed. (Author)

A74-19072 # Feasibility of a 'gas exchange' method for detecting extraterrestrial life by identification of nitrogen-fixing microorganisms (O vozmozhnosti metoda 'gazoobmena' dlia obnaruzheniia zhizni vne zemli-identifikatsiia azotfiksirulushchikh mikroorganizmov). R. I. Fedorova, E. I. Milekhina, and N. I. Il'iukhina (Akademiia Nauk SSSR, Institut Kosmicheskikh Issledovanii, Moscow, USSR). Akademiia Nauk SSSR, Izvestiia, Seriia Biologicheskaia, Nov.-Dec. 1973, p. 797-806. 32 refs. In Russian.

A74-19073 # Some results of the medico-biological investigations performed under the 'Gemini' and 'Apollo' programs. II-Changes in blood characteristics, bone apparatus, and mineral and electrolytic metabolisms of the astronauts (Nekotorye rezul'taty mediko-biologicheskikh issledovanii, vypolnennykh po programmam 'Dzhemini' i 'Apollon.' II- Izmenenie pokazatelei krovi, kostnogo apparata, mineral'nogo i elektrolitnogo obmenov u kosmonavtov). V. I. Kopanev and E. M. luganov. Akademiia Nauk SSSR, Izvestiia, Seriia Biologicheskaia, Nov.-Dec. 1973, p. 852-863. 24 refs. In Russian.

A74-19074 # The neuroendocrine functional system - Organization, functioning principles (Neiroendokrinnaia funktsional/naia sistema - Organizatsiia, printsipy funktsionirovaniia). I. I. Dedov (Akademíia Meditsinskikh Nauk SSSR, Moscow, USSR). Akademiia

Nauk SSSR, Izvestiia, Seriia Biologicheskaia, Nov.-Dec. 1973, p. 864-873, 19 refs. In Russian.

Formulation of the principles of functioning of the neuroendocrine system on the basis of experiments on rats under
conditions of deficiency (with subsequent compensation) and excess
of adrenal, thyroid, and sex gland hormones. The neuroendocrine
system, including the hypothalamic nuclei, the hypophysis, and the
peripheral endocrine target glands, is considered from the standpoint
of Anokhin's theory of functional systems as a functional supersystem. A useful result of the action of the neuroendocrine system is
the integrative action of various hormones - i.e., their combined
action in the effectors. A change in the hormone level in even one of
the glands results in a considerable reorganization of the entire
system in order to achieve an adaptation effect.

A.B.K.

A74-19075 # Effect of previous exposure to a steady magnetic field on the histochemical characteristics of the functional state of the adrenal cortex in X-rayed animals (Vliianie predvaritel'nogo vozdeistviia postoiannyn magnitnym polem na gistokhimicheskie pokazateli funktsional'nogo sostoianiia kory nadpochechnikov zhivotnykh, podvergnutykh Rentgenovskomu oblucheniiu). G. V. Finakova, G. V. Romanov, E. G. Bykov, and L. A. Piruzian (Akademiia Nauk SSSR, Institut Khimicheskoi Fiziki, Moscow, USSR). Akademiia Nauk SSSR, Izvestiia, Seriia Biologicheskaia, Nov.-Dec. 1973, p. 913-916. 19 refs. In Russian.

A74-19190 # Angioarchitectonics of the cerebellum cortex veins of man (Agioarkhitektonika ven kori mozochka liudini). K. A. Diubenko (Klivs'kii Medichnii Institut, Kiev, Ukrainian SSR). Akademiia Nauk Ukrains'koi RSR, Dopovidi, Seriia B - Geologiia, Geofizika, Khimiia i Biologiia, vol. 35, Nov. 1973, p. 1038-1040. 7 refs, In Ukrainian.

Microscopic study of blood efflux pathways on 37 cerebellum cortex preparations from men 16 to 83 years old shows the presence of short and long veins in the cerebellum cortex. The former are formed from the postcapillary veins of the molecular layer, absorb more veins from the ganglionic and grained layers, and combine in a single outgoing vein. The latter form large stems which collect blood from all cortical layers and white substance.

V.Z.

#### STAR ENTRIES

N74-13770# Translation Consultants, Ltd., Arlington, Va. STUDIES OF SMOKE DAMAGE TO TREES. 1: ACUTE **SO2 DAMAGE SYMPTOMS** 

Y. Nakashima, Y. Hagiura, S. Ogawa, and T. Kawashima [1973] 53 p refs Transt into ENGLISH from Fukuoka Ken Kenkyujo jiho 21 Go (Japan), no. 21, 1970 p 23-50 Sponsored by **EPA** 

(TR-389-73) Avail: NTIS HC \$4.75

Acute SO2 damage symptoms in the principal forestation tree varieties are reported. 35 varieties were exposed to SO2 (0.1 ppm - 12 ppm) and surveys were made of damage symptoms and the subsequent growth state. Seedlings of the principal forestation trees (1-2 years) demonstrated considerable damage symptoms following exposure to 10 ppm of SO2 for 30 minutes. Of the four principal production species. Cryptomeria japonica and Pinus densiflora had least resistance to acute SO2 damage, Pinus thunbergii was the next strongest, while Chamaecyparis obtusa was the strongest. Acute SO2 damage symptoms varied with the type of tree and a number of systematic classifications for this damage are considered. Author

N74-13771# Joint Publications Research Service, Arlington.

#### MAGNESTISM IN BIOLOGY

Yu. A. Kholodov 10 Dec. 1973 91 p refs Transl. into ENGLISH of the book "Magnetizm v Biologii" Moscow, Nauka, 1970

(JPRS-60737) Avail: NTIS HC \$6.75

A study was made of magnetiobiology, specifically the effects of magnetic fields on biological entities were analyzed. Data are included on the history, current research, and future prospects for magnetobiology.

N74-13772\*# Scientific Translation Service, Santa Barbara,

#### CLINICAL ASPECTS OF DRUG-INDUCED DISEASES OF THE LIVER

G. A. Martin Washington NASA Jan. 1974 15 p Transl. into ENGLISH from Z. fuer Gastroenterologie (West Ger.), v. 11, no. 5, 1973 p 343-350

(Contract NASw-2483)

(NASA-TT-F-15235) Avail: NTIS HC \$3.00 CSCL 06E

Drug induced liver damage, examples of the different types of damage, and the medicines that cause such damage are reviewed.

#### N74-13773\*# Techtran Corp., Glen Burnie, Md. MORPHOLOGICAL CHANGES IN MUSCLES AND NERVES OF THE EXTREMITIES UNDER CONDITIONS OF OVER-TRAINING

P. Z. Gudz Washington NASA Jan. 1974 14 p refs Transl. into ENGLISH from Ark. Anat., Gistol. Embriol. (USSR), v. 45, no. 7, 1963 p 55-63 (Contract NASw-2485)

(NASA-TT-F-15251) Avail: NTIS HC \$3.00 CSCL 06P

Models of trained and overtrained organisms were created in experiments on animals (dogs, goats and rats). A histological study revealed progressive changes in the muscles of animals subjected to moderate and submaximal loads. These changes reflect an adaptation of the organism to physical loads. Destructive and dystrophic alterations of part of muscle fibers were found in extermital muscles of the animals additionally subjected to the regime of prolonged maximum loads which produced a state of chronic fatigue. Trained motor nerve endings became considerably dilated and contained a large number of terminals and nuclei of Schwann's glia. Chronically fatigued motor nerve endings became distinctly reduced, as if compressed into a ball. Nuclei of Schwann's glia decrease number, parts of them were well impregnated. Author

#### N74-13774\*# Kanner (Leo) Associates, Redwood City, Calif. SENSITIZATION TO METABOLIC AND CARDIOVASCULAR **EFFECTS OF CATECHOLAMINES**

J. LeBlanc, J. Valliere, and C. Vachon Washington NASA Dec. 1973 4 p. Transl. into ENGLISH from J. Physiol. (Paris), v. 65 (Suppl.), Oct. 1972 p 255 A (Contract NASw-2481)

(NASA-TT-F-15220) Avail: NTIS HC \$3.00 CSCL 06E

The mechanisms of sensitization to the cardiovascular and metabolic effects of catecholamine are studied. It is found that guanethidine increases the tensor response to noradrenaline by blocking its uptake, rather than by increasing the sensitivity of the alpha receptors. It is demonstrated that repeated injections of noradrenaline have no effect on the activity of the alpha receptors in response to a given stimulus. On the other hand, the sensitization of the beta receptors seems to be effected by other mechanisms: repeated injections of isoproterenol sharply increase the response to it: there is a 70% increase in oxygen. cardiac rhythm is elevated, and there is a strong increase in the contractile force of the-ventricle. Repeated injections of isoproterenol increase the sensitivity of the beta receptors, possibly by means of the cyclic AMP, while the sensitization of the alpha receptors would seem to be due simply to a diminution in uptake.

#### N74-13775\*# Techtran Corp., Glen Burnie, Md. PSYCHOPHYSIOLOGY: RELATIONSHIPS IN RATS BETWEEN SPEED OF LEARNING AND DURATION OF PARADOXICAL SLEEP DURING THE NYCTHEMERIC CYCLE

Jean Delacour, Odile Houcine, and Jean Brenot Washington NASA Dec. 1973 7 p refs Transl. into ENGLISH from Compt. Rend. (France), ser. d. v. 275, 6 Dec. 1972 р 2725-2728

(Contract NASw-2485)

(NASA-TT-F-15222) Avail: NTIS HC \$3.00 CSCL 06C

The relationships between paradoxical sleep and avoidance learning in rats were studied according to a procedure reducing the direct interactions between these two variables. The findings suggested the existence of a relationship between the speed of this learning and the value of the duration of paradoxical sleep/waking period ratio during the nycthemeral cycle. Author

N74-13776\*# Techtran Corp., Glen Burnie, Md. THE EFFECT OF DIPINE ON PHENOBARBITAL INDUCTION OF CYTOCHROME P-450 INDUCTION AND STIMULATION OF MITOTIC ACTIVITY IN THE HEPATIC CELLS OF THE RAT

V. V. Klimenko, L. Ye. Nemirovskiy, and G. R. Mutovin. Washington. NASA Dec. 1973 6 p refs Transl. into ENGLISH from farmakol, i Toksikol, (Moscow), v. 36, no. 5, 1973 p 597-599 (Contract NASw-2485)

(NASA-TT-F-15225) Avail: NTIS HC \$3.00 CSCL 06C

The influence exerted by dipline on the induction with phenobarbital of cytochrome P sub 450 and on the stimulation of the mitotic activity in the rat's liver was studied. Both of them are shown to be inhibited even in the case when the phenobarbital induction is instituted 60 days after a single injection of a non-cytostatic dose of the mutagen. It is believed that changes occurring in the genetic system of the cell produced by dipline lie at the root of the cited phenomena.

N74-13777\*# Scientific Translation Service, Santa Barbara, Calif. X-RAY KYMOGRAPHIC INVESTIGATIONS OF THE CEN-

TRAL CIRCULATORY ORGANS IN THERAPEUTIC BATHS AND IN HYDROSTATIC PRESSURE ELEVATION. THEIR TECHNOLOGY, RESULTS AND POTENTIAL DEVELOP-MENTS: A REVIEW

Friedrich Ekert Washington NASA Jan. 1974 36 p refs Transf. into ENGLISH from Arch. Physik. Therapie (Leipzig), v. 8, 1956 p 66-82

(Contract NASw-2483)

(NASA-TT-F-15227) Avail: NTIS HC \$4.00 CSCL 06P

X-ray kymographic investigations in therapeutic baths are reviewed. Findings are summarized, and suggestions are made for future work on luman central circulatory organs.

N74-13778\*# Scientific Translation Service, Santa Barbara.

#### EFFERENT INNERVATION OF THE VESTIBULE

Andre Gribenski Washington NASA Jan. 1974 21 p. refs Transl. into ENGLISH from Ann. Oto-Laryngol. (Paris), V. 87, no. 1-2, 1970 p 77-92 (Contract NASw-2483)

(NASA-TT-F-15232) Avail: NTIS HC \$3.25 CSCL 06P

From an extensive review of the recent literature, it is attempted to clarify the following relationships: afferent and efferent vestibular innervations, and nerve connections involving the cortical, subcortical and cerebellar activities and their influence on vestibular nuclei Author

N74-13779\*# Techtran Corp., Glen Burnie, Md. PROBLEMS OF SPACE BIOLOGY, VOLUME 19: PROBLEMS OF THE RESISTANCE OF BIOLOGICAL SYSTEMS

B. N. Tarusov, ed. Washington NASA Nov. 1973 284 p. refs Transl into ENGLISH of the book "Problemy Kosmicheskoy Biologii, Tom 19, Problemy Ustoychivosti Biologicheskikh Sistem' Moscow, Nauka Press, 1971 p 1-285 (Contract NASw-2485)

(NASA-TT-F-761) Avail: NTIS HC \$6.50 CSCL 06C

The resistance of biological systems is discussed in connection with creating artificial life support systems for manned space flight.

N74-13780\* Techtran Corp., Glen Burnie, Md.
THE LIMITS OF THE ADAPTATION OF LIFE TO EXTREME CONDITIONS (IN CONNECTION WITH PROBLEMS OF EXOBIOLOGY)

S.I. Aksenov In its Probl. of Space Biol., Vol. 19 (NASA-TT-F-761) Nov. 1973 p 1-76 refs Transl. into ENGLISH of the book "Problemy Kosmicheskoy Biologii, Tom 19, Problemy Ustoychivosti Biologicheskikh Sistem" Moscow, Nauka Press. 1971 p 7-89

CSCL 06C

Accommodation is discussed as a universal evolutionary principle which essentially will apply to all life forms, regardless of chemical base (carbon, silicon, etc.). Life forms must either adapt to extreme conditions or perish, and for any life form an extremum factor is any significant deviation in environmental parameters. The possibility of life forms existing in specific extraterrestrial environments is discussed, and a conclusion is drawn which unequivocally states that through many forms of accommodation life is possible in many different environments.

Author

#### N74-13781\* Techtran Corp., Glen Burnie, Md. MASS-ENERGY METABOLIC CHARACTERISTICS OF ALGAE

1. V. Smirnov In its Probl. of Space Biol., Vol. 19 (NASA-TT-F-761) Nov. 1973 p 77-171 refs Transl, into ENGLISH of the book "Problemy Kosmicheskoy Biologii, Tom 19, Problemy Ustoychivosti Biologicheskikh Sistem" Moscow, Nauka Press. 1971 p 90-180 CSCL 06F

A mathematical analysis is given for the mass energy characteristics of photosynthesizing algae. An engineeringbiological approach to this allows for a detailed analysis of the

characteristics for a broad spectrum of environmental situations in which such algae are used as a component of a life support system. Models of such systems are constructed and are employed to demonstrate actual and hypothetical situations. Computers are employed for this purpose.

#### N74-13782\* Techtran Corp., Glen Burnie, Md. KINETIC PRINCIPLES OF INTERACTION OF COMPONENTS IN COMPLEX BIOLOGICAL SYSTEMS

A. B. Rubin In its Probl. of Space Biol., Vol. 19 (NASA-TT-F-761) Nov. 1973 p 173-278 refs Transl into ENGLISH of the book "Problemy Kasmicheskoy Biologii, Tom 19, Problemy Ustoychivosti Biologicheskikh Sistem" Moscow, Nauka Press, 1971 p 181-285 CSCL 06F

A biomathematical analysis of component interaction in biological systems is given. Two primary types of systems are discussed - open systems and closed systems. The applicability of these systems to life support equipment in spacecraft is analyzed and formulae are provided to demonstrate the effect (theoretical) of closed and open systems in life support systems.

#### N74-13783\*# Techtran Corp., Glen Burnie, Md. THE EFFECT OF DEHYDRATION AND HYPERTHERMIA ON THE HOMEOSTASIS OF THE HEALTHY MAN

V. I. Pokrovskiy, V. V. Bulychev, T. Ye. Lisukova, V. V. Maleyev, V. A. Utekhin, T. Ye. Chernyayeva, Yu. M. Mayorov, S. S. Milovidova, and K. A. Kafarov Washington NASA Dec. 1973 11 p refs Transl, into ENGLISH from Sov. Med. (Moscow), no. 2, 1973 p 27-31 (Contract NASw-2485)

(NASA-TT-F-15250) Avail: NTIS HC \$3.00 CSCL 06S

Clinico-physiological and biochemical changes of homeostasis in 16 healthy males undergoing dehydration of up to 3 to 4% of the body weight and in 8 normal males in whom the body temperature was raised to 38.1 to -40.3% were analyzed. Changes occurring in the physical and chemical properties of the blood, such as in its specific weight, viscosity, hematocrit (D.C.V.), protein. blood clotting system, acid-base balance, electrolytes and gas movement are described. Differences in the contractile activity and size of the heart, the state of the peripheral circulation following dehydration and hyperthermia and, in particular, the emergence of venous hyperoxemia in the last named cases were disclosed. Changes in the homeostasis following physiological dehydration were investigated with a view to giving substance to the method of water and electrolyte therapy used in treating dehydrated patients with acute gastrointestinal infections. Variations in hyperthermia are of interest in appraising the effect of therapy accorded to febrile infectious patients.

N74-13784# Advisory Group for Aerospace Research and Development, Paris (France).

### PATHOPHYSIOLOGICAL CONDITIONS COMPATIBLE WITH

Heinz S. Fuchs, ed. (German Fed. Armed Forces, Bonn) Oct. 1973 152 p refs in ENGLISH and FRENCH Presented at AGARD Aerospace Med. Panel Specialist Meeting, Pensacola, Fla., 16-17 May 1973

(AGARD-CP-129) Avail: NTIS HC \$9.75

Medical selection and maintenance procedures for aircrews are reported. The effects of ageing, flight stress, clinical and psychophysiological pathological factors on pilot flight fitness are considered.

N74-13785 German Federal Armed Forces, Bonn. TECHNICAL EVALUATION REPORT, CONCLUSION AND RECOMMENDATIONS

Heinz S. Fuchs In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 10 p

In the past, physical standards have been overly conservative. because it was necessary to base aeromedical criteria on medical concepts derived from experience with diseased states in hospital patients. Increasing experience with aircrew populations, based upon specific studies to disclose the relationships between the pathophysiology of early disease and the psychophysiological requirements of flight, allows a more subtilized interpretation of diagnostic and clinical findings and gives now a wider and safer prognostication. Therefore, it is believed that there is a justification to change these standards - based upon systematic and scientific reevaluation, taking advantage of newly developed knowledge and research techniques. Because of the unique nature of the ageing aircrew population, it is frequently necessary to accomplish this research directly upon the flyers themselves, rather than to extrapolate from general medical research.

N74-13786 Naval Aerospace Medical Research Lab., Pensacola, Fla.

### THE THOUSAND AVIATORS: AGING AND THE BLOOD PRESSURE

Robert E. Mitchell /n AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 3 p

Blood pressure patterns are discussed for the members of a research group over a 32 year period and the implications of the patterns. In contrast to what was previously thought to be the case, namely, that blood pressure levels not rise with increasing age, the latest survey indicates that there are many and important exceptions to this generality after 45 years of age. Since this is the period when most naval aviators enter the administrative phase of their careers, the finding has less significance than if it occurred at an earlier age but has greater operational significance in the case of commercial airline pilots inasmuch as these men continue to fly at age 60. It would appear that this late onset of increased blood pressure justifies the more liberal standards for admission to flight training. At the same time personnel in an active flight status can be allowed to continue active flying if no complications are noted and treatment is not indicated

Author

N74-13787 Naval Aerospace Medical Research Lab., Pensacola,

#### ELEVATED BLOOD PRESSURE IN AIRCREW

D. R. Stoop, K. C. Stanton, and D. D. Brown In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 5 p

The evaluation, management, and disposition of the aircrew with elevated blood pressure are frequently difficult problems. Analysis of evaluations reveals an obvious reluctance on the part of the physician to establish a diagnosis of hypertension and a tendency to avoid drug therapy in spite of accepted evidence that early treatment reduces morbidity. The implications and potential problems in this approach have been discussed, and current practices and policies regarding the aircrew with hypertension have been presented and defended.

N74-13788 School of Aerospace Medicine, Brooks AFB, Tex. Internal Medicine Branch.

#### RETURNING AIRMEN WITH ABNORMAL EXERCISE TESTS AND NORMAL CORONARY ANGIOGRAMS TO FLYING STATUS

Victor F. Froelicher, Frank G. Yanowitz, A. J. Thompson, and Malcolm C. Lancaster In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 7 p refs

Individuals with ST segment changes during and/or after exercise are considered to have an increased risk of developing the manifestations of CAD (Coronary Artery Disease). However, it is also known that both the double Master's test and maximal treadmill testing yield false positive and negative results reactive to CAD. The results of coronary angiography are presented in 63 asymptomatic aircrewmen with resting repolarization abnormalities and exercise testing responses suggestive of coronary artery disease. Fifty-four per cent had angiographic coronary artery disease, and many had high risk lesions. Forty-six per cent had no angiographic lesions and were recommended for return to flying duties. The findings in this study, the lack of significant complications, the concern for public safety, and the economics

of maintaining a flying force justify the continued use of elective coronary angiography in selected asymptomatic aircrewmen.

Author

N74-13789 School of Aerospace Medicine, Brooks AFB, Tex. Applied Physiology Branch.

### MYOCARDIAL AND CEREBRAL FUNCTION DURING EXPOSURE TO CARBON MONOXIDE

Howard H. Erickson and Milton J. Hernandez-Perez In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 6 p refs

Aircrew members exposed to carbon monoxide may sustain an increase in coronary blood flow and a reduction in oxygen delivery to the heart and brain. These factors may result in a decrement in man's performance in strategic and tactical weapon systems in an enemy defense environment. Since many of the stresses — such as physical exertion, altitude hypoxia, and acceleration — are cumulative, carbon monoxide may affect the heart and cardiovascular system of man during operational flying by decreasing still further the oxygen supply and reserve in the heart and brain.

Author

N74-13790 Hopital d'Instruction des Armees, Versailles (France)

#### CARDIAC VALVULOPATHIES AND FLIGHT TOLERENCE [CARDIOPATHIES VALVULAIRES ET TOLERANCE AU VOL]

G. Leguay In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 12 p. refs. In FRENCH

Due to exceptional circumstances 8 pilots suffering from aortic insufficiency, aortic stenosis, and mitralis stenosis have been on flying status, aeromedically monitored up to 15 and 20 years. The cardiac valvulopathies raise a twofold problem: they may potentially endanger flight safety by leading to a sudden cardiac syncope and they can be aggravated by flying, particularly by acceleration forces. Flight safety, however, has never been threatened by these aircrew in the light of experience over several years. The tolerance of flying pilots suffering from moderate aortic insufficiency seems satisfactory, in particular in fighter pilots exposed to high g-loads.

N74-13791 Centre Principal d'Expertises Medicales du Personnel Navigant Paris (France)

## VALUE OF CARDIAC MECHANOGRAMS IN EVALUATING FLYING PERSONNEL [INTERET DES MECANOGRAMMES CARDIAQUES DANS L'EXPERTISE DU PERSONNEL NAVIGANT]

R. Carre, C. Nogues, and B. Raviart In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 14 p refs in FRENCH

Cardiac mechanograms provide useful information in the medical evaluation of aircrew and are obtained fast and easily by a noninvasive technique. The cardiogram itself provides an estimate of the elasticity of the arterial wall, and in that way gives criteria for atherosclerosis. The combined use of chronocardiographic methods (EGG, cardiogram) provides an opportunity of validating the contractibility of the cardiac muscle. These methods are important in the cardiologic survey of aircrew, both to detect atherosclerosis and monitor arterial hypertension.

Author

N74-13792 Hopital d'Instruction des Armees, Versailles (France). Service de Medecine Aeronautique.

### ASTHMA IN MILITARY FLYING PERSONNEL [L'ASTHME DANS LE PERSONNEL NAVIGANT MILITAIRE]

R. Pannier In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 8 p refs In FRENCH

Detection of bronchial asthma is based mainly on actually observed acute episodes. That is the reason why applicants for flight training will not be accepted unless they are subjected to an acetylcholin test. It is well known that patients with bronchial asthma benefit from flying. However, because of its serious

consequences if it occurrs in flight, bronchial asthma is considered to jeopardize flight safety. It is important to realize that treatments have to be adapted to the aircrew tasks since some medications may be contraindicated for flying activities in view of their secondary effects. Therefore, applicants for flying duties suffering from bronchial asthma must be rejected: aircrew who develop bronchial asthma during an established career might be considered for a waiver on an individual basis, but as a rule they will not be authorized for primary control of aircraft.

Author

N74-13793 Hopital d'Instruction des Armees, Versailles (France).

IDIOPATHIC SPONTANEOUS PNEUMOTHORAX IN FLYING PERSONNEL [LE PNEUMOTHORAX SPONTANE IDI-OPATHIQUE DANS LE PERSONNEL NAVIGANT]

Roger Pannier In AGARD Pathophysiol. Conditions Competible with Flying Oct. 1973 6 p In FRENCH

Rupture of subpleural blebs is considered the most frequent cause of idiopathic spontaneous pneumothorax. Idiopathic spontaneous pneumothorax can occur in flight in the course of rapid decompression, by ascent to altitude both in flight and in an altitude chamber when trapped air within these blebs expands and ruptures the thin pleural layer, by an hydrostatic hemodynamic effect, or incidentally without any concomitant exertion or any physical stress. Applicants for flight training reporting one episode of idiopathic spontaneous pneumothorax must be rejected: aircrew on active duty and with an established flying career must be grounded unless they have undergone successful pulmonary surgery. Ten out of thirteen aircrew who suffered from idiopathic spontaneous pneumothorax were kept on flying status after successful pulmonary surgery. The time of grounding ranged from 3 to 14 months.

N74-13794 Centre d'Essais en Vol. Bretigny-sur-Orge (France). AIRCREW'S FITNESS FOR FLYING DUTIES AFTER VERTEBRAL FRACTURES AND SPINAL SURGERY [APTITUDE AU VOL DU PERSONNEL NAVIGANT APRES FRACTURES DU RACHIS ET INTERVENTIONS CHIRURGICALES SUR LA COLONNE VERTEBRALE]

Roland-Paul Delahaye (Service de Sante pour l'Armee de l'Air, Paris). Robert Auffret, Jacques Mine (Hopital Begin, Saint-Mande), and Pierre-Jean Metges (Hopital Begin, Saint-Mande). // AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 7 prefs. In FRENCH

Some features of flying such as vibration and accelerations, may sensitize the spine; ejection seat bail-out and/or crash can result in more or less deleterious spine injuries and fractures. After every accident, spinal disorders, or spinal surgery aircrew must be reexamined for flying fitness. After fractures it is of the utmost importance to determine the degree of spinal stability or instability, such as after spinal disorders e.g. osteoarthrosis or arthrosis, or surgery (laminectomy), or surgery for disc hernias or spondylolisthesis. Special emphasis has been given to the evaluation of aircrew with repeated vertebral traumas on damaged spines and fractures after surgery for spinal conditions. Author

N74-13795 Institute of Aviation Medicine, Fuerstenfeldbruck (West Germany).

THE RISK OF MINOR SPINAL ABNORMALITIES IN AIRCREWS: EVALUATION OF EJECTION CASES

A. Beck In AGARD Pathophysiol Conditions Compatible with Flying Oct. 1973 4 p refs

An attempt has been made to determine pre-existing spinal abnormalities in aircrew which may have had a detrimental effect on the traumatic events, retrospectively, i.e. after fracture of the vertibral body had occured. The collection of these findings was compared with cases of ejection seat bailouts without injuries or fractures in order to recognize morphological alterations which may possible be conducive to fracture.

Author

N74-13796 Advisory Group for Aerospace Research and Development, Paris (France).

AERONAUTICAL REHABILITATION OF FLYING PER-

SONNEL SUFFERING FROM ACUTE PSYCHIATRIC DISTURBANCES [LA REHABILITATION AERONAUTIQUE DES MEMBRES DU PERSONNEL NAVIGANT AYANT PRESENTE DES TROUBLES PSYCHIATRIQUES AIGUS] R. Gelly and J. C. Hadni In its Pathophysiol. Conditions Compatible with Flying Oct. 1973 9 p. In FRENCH

Acute psychiatric symptoms combined with behavioral anomalies are normally aeromedical reasons for rejection both from flying and from regular military service. Based on an extensive case report survey, it can be demonstrated fairly clearly that such decisions are not always justified. Each case must be considered from an individual viewpoint, since in many cases psychiatric symptoms and behavioral anomalies cannot be diagnosed with absolute certainty. In particular, some obviously serious crises merely reflect individual difficulties in the course of adaptation. Any decision must therefore be based on a diagnosis of the personality structure and personality tests must be considered a major element of psychopathological diagnosis. Psychotherapy can bring to a satisfactory solution some psychiatric syndromes which have been in the past considered irreversible. However, psychotherapy in order to be successful, must be associated with concurrent actions both in the professional environment and in further flying training, etc.. Under these conditions the rehabilitation for flying duties of aircrew who had acute psychiatric troubles, possible.

N74-13797 Institute of Aviation Medicine, Fuerstenfeldbruck (West Germany).

IMPORTANCE OF THE 4 - 5 c/sec RHYTHM IN THE EEG TO DETERMINE MILITARY FLYING FITNESS

H. Oberholz In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 3 p refs

The 4 - 5 c/sec rhythm is probably a genetically determined variant of the normal EEG which may easily be misinterpreted as a fairly serious general alteration of the EEG. In order to differentiate between similar EEG patterns, the characteristics of this EEG-variant and the special mode of EEG registration were discussed and appropriate EEG's demonstrated. From the literature, the results of family examinations including possible causes of these EEG-variants were presented. Psychological peculiarities in persons showing this EEG variant were emphasized and criteria for the assessment of military flying fitness and preventive measures were proposed. Cases found were analyzed and the procedures applied to variant carriers presented. Author

N74-13798 Centre Principal d'Expertises Medicales du Personnel Navigant, Paris (France).

OPHTHALMOLOGICAL SUPERVISION OF DIABETIC FLYING PERSONNEL [SURVEILLANCE OPHTALMOLOGIQUE DU PERSONNEL NAVIGANT DIABETIQUE]

J. P. Chevaleraud and G. Perdriel In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 5 p. In FRENCH

With reference to diabetes mellitus, the ophthalmologist's role can be twofold; through his special examinations he can detect this disorder very early and he can monitor its different forms, its several steps of evolution, and its implications for flying fitness. Based on broad clinically and functionally oriented knowledge and electrophysiological experience, some interesting proposals for the evaluation of aircrews who suffer from different forms of diabetes mellitus are reported.

Author

N74-13799 School of Aerospace Medicine, Brooks AFB, Tex. Aerospace Medical Div.

MANAGEMENT OF GLAUCOMA IN AN AGEING FLYING POPULATION

Thomas J. Tredici, James L. Mims, III, and James F. Culver In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 3 p. refs

Ageing has definite and certain predictable effects on the visual apparatus. Loss of accommodation with age hampers important visual tasks in the cockpit. Disease processes that are common in any population will eventually also affect the flyer.

The occurrence of narrow angle glaucoma in the flying population is so small that it is insignificant: however, with relative maturation of a flying force a 2 to 3 percent figure does become significant. Glaucoma strikes a flyer after a great deal of time and money have been expended in his training and when his experience could be utilized to the maximum. Medical grounding of a significant number of experienced flyers can be considered a loss. Many flyers with increased intraocular pressure have been retained on flying status by a rationale of diagnosis and treatment. The visual effects of drugs utilized in the treatment of glaucoma have been evaluated. Presently, only intraocular tension lowering drugs that do not effect visual function are being used.

N74-13800 Centre Principal d'Expertises Medicales du Personnel Navigant, Paris (France).

CURRENT ASPECTS OF COCHLEAR FUNCTION APPLIED TO FLYING PERSONNEL [ASPECT ACTUEL DE LA FONCTION COCHLEAIRE CHEZ LE PERSONNEL NAVIGANT!

P. Blanc and J. Bastien (DCSSA, Paris) In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 3 p. In FRENCH

This 9-years survey is based upon 6.024 audiograms of flying personnel who have been rated for at least two years. The results of this investigation can be summarized as follows: (1) Any barotrauma on the middle ear may be neglected; an air passenger who has had stapedectomy for otosclerosis may travel by air without any risk; (2) occupational deafness was not found in flying personnel under investigation; (3) hearing discrimination deficits were found in some individuals since the aviation operational environment stresses aircrew by its considerable noise levels; and (4) 12 aircrew with intact ear drums were found to be suffering from moderate conduction deafness and presenting the classic otosclerotic syndrome. Two of them underwent cochlear surgery and have flown to date 1.000 flying hrs each. The audiometric results produced by surgery remained excellent.

Author

N74-13801 Institute of Aviation Medicine, Fuerstenfeldbruck (West Germany).

PURE TONE HEARING LOSSES IN PILOTS OF VARIOUS AIRCRAFT, AGE AND FLYING TIME AND ITS SIGNIFICANCE FOR INFLIGHT SPEECH COMMUNICATION

G. H. Froehlich In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 4 p

The punch cards of 2000 pilots investigated in 1971 have been separated into 4 groups of flying time respectively age, subdivided into pilots of jet aircraft, piston engined aircraft and helicopters. High tone hearing losses were increasing with age and flying time and in helicopter pilots more rapidly than in pilots of the other types of aircraft. A number of pilot's speech audiograms have been investigated. The intelligibility scores of hearing losses above 3000 Hz were excellent and there are no problems with inflight speech communications. Hearing losses above 2000 Hz resulted in intelligibility scores of 72% at low and 85% at medium speech levels. Less than 10% of the pilots above 45 years of age had hearing losses above 1500 Hz. At medium speech levels they obtained only a score of 70%, 100% are frequently not reached even with high speech levels. Together with the masking effect of inflight cabin noise, voice communication might be endangered, especially if the attenuation characteristics of headsets and flying helmets are poor. In these cases, the use of properly fitting headgar is especially important to insure a favorable noise to speech ratio. Author

N74-13802 Hopital d'Instruction des Armees, Versailles (France).

PROTEINURIAS IN FLYING PERSONNEL [PROTEINURIES ET PERSONNEL NAVIGANT]

G. Leguay In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 12 p. In FRENCH

Proteinurias have been found much more frequently among air transport aircrew than in fighter pilots. More than 50% of all cases have been observed in aircrew between 20 and 25 years of age which is obviously caused by the age dependant incidence of the orthostatic proteinuria. Chronic proteinurias are in most instances caused by chronic glomerulopathies. If this condition is clinically stabilized, it may be considered compatible with flying. Clearance impairment, however, necessitates a special diet, and the existence of a marked hypertension as well as the incompatibility with vaccinations indicates grounding of these aircrew. To verify the interaction of proteinurias and flying, several individuals were exposed to acceleration forces on the human centrifuge. No significant changes of proteinuria were observed during or after the centrifuge rides. However, barometric stresses which occur when flying at different altitudes may be considered dangerous since these barometric pressure differences can exacerbate infectious lesions in ENT areas.

Author

N74-13803 School of Aerospace Medicine, Brooks AFB, Tex.
THE OCCURRENCE OF HYPERLIPIDEMIA IN FLYING AND
NONFLYING SUBJECTS OF THE USAFSAM CARDIOVASCULAR DISEASE STUDY

Dale A. Clark, Kenneth A. Narahara, and Margaret F. Allen In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 6 p. refs

The subjects of a cardiovascular disease study were separated into flying and non-flying groups, and the occurrence of elevated lipid levels in these groups was tabulated. The question of interest was whether the stresses of flight elevate serum cholesterol and predispose pilots to the development of atherosclerotic heart disease. None of the percentages obtained in this investigation differ significantly between the two groups. These data therefore indicate that the stresses associated with flying have no more effect on serum lipids than do the stresses experienced by a group of non-flying officers. A corollary inference is that the prognostic significance of a given serum lipid level is the same whether observed in a flying or a non-flying officer.

Author

N74-13804 Advisory Group for Aerospace Research and Development, Paris (France).

THE PROBLEM OF DIABETES MELLITUS IN AVIATION MEDICINE

Gerhard Renftle In its Pathophysiol. Conditions Compatible with Flying Oct. 1973 7 p refs

Problems in aviation medicine which diabetes mellitus raise regulations, waivers, diet, and hypoglycemic agents, are discussed. While the incidence rate is relatively low in student pilots, a higher number of cases is found during follow-up examinations among experienced senior or command pilots. Onset at age 20 to 40 may have the course of either juvenile or adult type. Annual evaluation of carbohydrate metabolism with a standard glucose tolerance test should be mandatory for every military or commercial pilot, and every private pilot after age 40. As sulfonylureas may cause hypoglycemia, any antidiabetic therapy should not be considered compatible with flying duties. Individuals with decreased carbohydrate metabolism tend to hypoglycemic reactions especially in hazardous situations or fasting periods. Waivers should be granted only for diabetic pilots whose carbohydrate metabolism is fully controlled with diet, confirmed by daily testing of urine and frequent postprandial blood sugar examinations. A case report illustrates the fluctuating and reversible course of an incipient diabetes and its effective management in a highly motivated and cooperative senior pilot.

N74-13805 School of Aerospace Medicine, Brooks AFB, Tex. THE REPEATABILITY OF AN ABNORMAL 2-HOUR GLUCOSE TOLERANCE TEST

The diagnosis of diabetes mellitus not only implies a chronic

abnormality of carbohydrate metabolism and an increased risk of premature vascular disease, but in the flyer, this diagnosis implies an increased risk to flying safety by reason of physical performance degradation. The glucose tolerance test (GTT) is the accepted standard for the diagnosis of nonmanifest diabetes. A study of the repeatability of the 2-hour GTT was carried out in 162 flyers who had an initial GTT and a repeat GTT from 6 - 24 months later. Of those initial tests considered abnormal, 55 to 60% reverted to normal on the repeat test. The repeatability of the GTT varied with the criteria used and with the number of points on the GTT curve that was considered. The effects of stress on glucose metabolism and the results of the modification of the criteria for the diagnosis of diabetes are discussed. The results of this study illustrate the importance of basic definitions of diagnostic criteria for diseases which have a long term effect on the health of the flying population. Author

N74-13806 Institute of Aviation Medicine, Fuerstenfeldbruck (West Germany).

#### GERMAN AIR FORCE EXPERIENCES WITH CERTAIN CRITERIA FOR GRANTING A WAIVER

Guenther Schirrmann In AGARD Pathophysiol. Conditions Compatible with Flying Oct. 1973 4 p refs

During a period of 13 years there were 28,699 periodic physical examinations of aircrew with 602 granted waivers. These medical waivers were primarily granted in the disciplines of ophthalmology and internal medicine and seam to be justified even after a critical review. Prerequisite to this procedure is not only a profound medical knowledge and know-how, but also comprehensive flight surgeons' experience. A correlation of accidents/incidents caused by pilots with and without waivers indicates practically identical findings: while the aircraft accident rate was 3,76% for pilots flying without a waiver, it was 3,45% for pilots flying with a waiver and is therefore identical. An analysis of aircraft accidents involving the waiver group revealed no evidence indicating that waivers are a triggering or contributing factor in accidents. The procedure seems to be sufficient to eliminate all flying safety risks.

N74-13807\*# Agricultural Research Service, Berkeley, Calif. Western Regional Research Lab.

#### ROTARY PLANT GROWTH ACCELERATING APPARATUS **Patent Application**

Richard R. Dedolph, inventor (to NASA) Filed 27 Dec. 1973 27 p Sponsored by NASA

(NASA-Case-ARC-10722-1; US-Patent-Appl-SN-428995) Avail: NTIS HC \$3.50 CSCL 06C

A plant growth acceleration apparatus is reported wherein plants are grown in rotating beds driven in a planetary path about a primary axis so as to reduce the constraints of gravity upon the plants. NASA

N74-13808\*# Techtran Corp., Glen Burnie, Md.
THE INFLUENCE OF THE UTRICLE AND THE EFFERENT VESTIBULAR ACTIVITY ON THE SPONTANEOUS AF-FERENT ACTIVITY OF THE NERVES OF THE HORIZONTAL CANAL AND THE ANTERIOR VERTICAL CANAL IN THE FROG

J. Caston Washington NASA Jan. 1974 18 p refs Transl. into ENGLISH from J. Physiol. (Paris), v. 62, 1970 p 407-420 (Contract NASw-2485)

(NASA-TT-F-15253) Avail: NTIS HC \$3.00 CSCL 06C

Spontaneous activity was studied in the horizontal and anterior semicircular canal nerves of the frog. Recordings were made with isolated heads (section being performed behind the medulla oblongata), in one group with the intact preparation. after section of the utricular nerve, and on the peripheral end of the cut ampullar nerve; in a second group with the intact preparation, after destruction of the encephalon, and with the peripheral end of the cut ampullar nerve. It was found that spontaneous activity decreases in most cases after section of the utricular nerve; decreases, increases, or remains the same after destruction of the encephalon; at the peripheral end of the cut nerve it always at least equals but mostly is greater than

that recorded with the intact preparation and after the two previous tests. The ampullae of the horizontal and anterior canals are innervated by efferent fibers (some related to the utricle) and by collaterals from fibers of the utricular nerve.

N74-13809\*# National Aeronautics and Space Administration, Washington, D.C.

#### THE DYNAMIC BEHAVIOR OF THE EAR IN SEPARATING THE SOUND SPECTRUM INTO FREQUENCY GROUPS

H. Scholl Dec. 1969 12 p refs Transl into ENGLISH from Acustica (Stuttgert), v. 12, 1962 p 101-107 (NASA-TT-F-12719) Avail: NTIS HC \$3.00 CSCL 06P

Together with the inherent persistence of the ear, the spectral separation of sound into frequency groups is an important factor in the formation of the masking thresholds of wideband pulses (white noise pulses, pressure pulses). The requisite high selectivity of the ear is not continuously present but is built up within a certain interval of time after incidence of the sound. Thus sounds of very short duration are not spectrally separated at all; their masking thresholds are determined by the total energy. On the other hand, with long pulses or continuous sounds, as a result of spectral separation, the intensity of only a single frequency group is fully effective. The time required for the ear to separate the sound spectrum into frequency groups, about 10 ms, is measured directly using a special scanning method. The masking thresholds of sound pulses as a function of pulse duration -calculated from these data are in good overall agreement with measured masking thresholds.

### N74-13810\*# Techtran Corp., Glen Burnie, Md. MACROMETRIC CHANGES IN THE MAKEUP OF THE HUMAN BODY IN HYPODYNAMIA

A. G. Zhdanova Washington NASA Jan. 1974 11 p refs Transl. into ENGLISH from Arkh. Anat., Gistol. i Embriol. (Moscow), v. 29. no. 12, 1965 p 29-34 (Contract NASw-2485)

(NASA-TT-F-15252) Avail: NTIS HC \$3.00 CSCL 06P

Changes were studied in human organism produced by 2-. 5-, 7- and 10-day long hypodynamia, affecting general weight of the body, its fat, nonfat components, and specific weight of the body. It is suggested that hypodynamia results in a relative atrophy of the skeletal muscles, which may be of a considerable hindrance for the organism, especially at the moment of landing, when the nervous-muscular activity begins to be activated. and later on with readaptation to the conditions of the ground existence. Consequently, preservation and maintenance of adaptive reactions of the muscular and other systems to the effect of gravity are an important prerequisite for a successful issue of durable flights connected with forced conditions of hypodynamia and weightlessness andfor return to earth gravitation.

#### N74-13811\*# Linguistic Systems, Inc., Cambridge, Mass. DEFICIENCY IN RETENTION OF CONDITIONING AFTER DEPRIVATION OF PARADOXICAL SLEEP IN RATS

Pierre Leconte and Vincent Bloch Washington NASA Jan. 1974 8 p refs Transl. into ENGLISH from Compt. Rend. (Paris), Ser. D. v. 271, 15 Jul. 1970 p 226-229 (Contract NASw-2482)

(NASA-TT-F-15223) Avail: NTIS HC \$3.00 CSCL 06C

Forty-eight hours' elective and total deprivation of paradoxical sleep disturbed the retention of conditioning in the rat. There is less disturbance with partial deprivation (50%) of the same duration. However, after such privation, the capability of reacquiring the same learning does not seem altered. Thus paradoxical sleep would seem to play a part in the stabilization mechanisms of the memory trace.

#### N74-13812\*# Linguistic Systems, Inc., Cambridge, Mass. EFFECT OF ACQUISITION LEVEL ON INCREASED PARA-DOXICAL SLEEP DURATION DUE TO AVOIDANCE CONDITIONING IN THE RAT

Elisabeth Hennevin, M. M. Pierre Leconte, and Vincent Bloch Washington NASA Jan. 1974 8 p refs Transl into ENGLISH from Compt. Rend. Acad. Sci., Ser. D (France), v. 273, 1971 p 2595-2598

(Contract NASw-2482)

(NASA-TT-F-15221) Avail: NTIS HC \$3.00 CSCL 06C

The increase in the duration of paradoxical sleep after learning augments with the order of sessions up to the platform of the learning task where it stops. After each session the increase in paradoxical sleep is manifested only for 30 minutes after falling asleep.

Author

N74-13813\*# Techtran Corp., Glen Burnie, Md.
PROBLEMS OF SPACE BIOLOGY. VOLUME 22: METABOLISM UNDER THE EXTREME CONDITIONS OF SPACE-FLIGHT AND DURING ITS SIMULATION

I. S. Balakhovskiy and Yu. V. Natochin Washington NASA Dec. 1973 195 p refs Transl. into ENGLISH of the book "Problemy Kosmicheskoy Biologii. Tom 22: Obmen Veshchestv v Ekstremalnykh Usloviyaka Kosmicheskogo Poleta i Pri Yego Imitatsii" Moscow, Nauka. c. 1968 212 p (Contract NASw-2485)

(NASA-TT-F-15163) Avail: NTIS HC \$11.75 CSCL 06S

The book summarizes the experience of ten years of study of the metabolic processes in cosmonauts who have flown aboard Soviet spacecraft. The changes observed in them are compared with the results obtained in model experiments and data published by the American researchers. The excretion of water and salts directly during the flight and immediately after landing in analyzed in detail. The methodological section of the book deals with a detailed description of the methods of clinical biochemistry, specially devised and applied to problems of space medicine: the complex microchemical analysis of blood dried on pieces of paper, determination of the mass of hemoglobin, etc. General problems of water transport in osmoregulatory organs and the regulation of water-salt exchange are discussed.

N74-13814# Naval Postgraduate School, Monterey, Calif. FLUID FLOW IN THE LUNG: A SURVEY. NUMERICAL SOLUTION FOR GAS MIXING IN A SIMPLE MODEL OF THE LUNG, AND EXPERIMENTAL STUDY OF FLOW IN A THIN WALLED COLLAPSIBLE TUBE M.S. Thesis Jan David Janiec Jun. 1973 67 p refs

(AD-767638) Avail: NTIS CSCL 06/16

The range of fluid dynamics applications in the lung is vast, encompassing many interesting problems rarely touched in any other single engineering area. A survey of recent work in this field; was a simple model of the lung was developed indicating its application to a wide range of similar problems. Finally, new parameters were experimentally investigated in flow through a thin-walled collapsible tube. Results indicated the effects of the parameters to be significant in the flow of blood in the pulmonary capillaries as controlled by the surrounding aveolar pressure.

N74-13815# Payne, Inc., Annapolis, Md.
A STATISTICAL STUDY OF GRIP RETENTION FORCE Final Report, 30 Jun. 1971 - 2 Mar. 1973

Theodore W. Horner and Fred W. Hawker Wright-Patterson AFB, Ohio AMRL May 1973 48 p. refs

(Contract F33615-71-C-1892; AF Proj. 7231)

(AD-767904; Working-Paper-101-11; AMRL-TR-72-110) Avail: NTIS CSCL 06/19

To assess an ejection seat occupant's ability to hold on to a handle the data from the two-handed force retention capability tests of Garrett, Alexander and Bennett are analyzed to produce curves of probability of letting go as a function of force. Two curves are produced: one for double grip handles, comprising a T-Bar and a Twin Grip; and one for Rings, comprising a flexible toop and the familiar, rigid D-Ring. It is concluded that, at the force levels experienced in most present-day ejections, which occur at low and moderate air speeds, the probability of letting go a ring is an order of magnitude greater than for a double grip handle. It is concluded that handle design strongly influences the probability of letting go, and therefore the probability of arm flail injury.

N74-13816# Rochester Univ., N.Y.
EFFECT OF EXTREMELY LOW FREQUENCY ELECTRIC AND
MAGNETIC FIELDS ON ROOTS OF 'VICIA FABA' Final

Report

Morton W. Miller 2 Oct. 1973 10 p refs (Contract N00014-67-A-0398-0011) (AD-767387) Avail: NTIS CSCL 20/3

Roots of Vicia faba were exposed to electric and magnetic fields comparable to those of Project SANGUINE. There were no differences among control and exposed roots for growth or mitotic index. Also, there were no chromosomal anomalies.

Author (GRA)

N74-13817\*# BioTechnology, Inc., Los Altos, Calif.

SIMULATOR EVALUATION OF DISPLAY CONCEPTS FOR PILOT MONITORING AND CONTROL OF SPACE SHUTTLE APPROACH AND LANDING, PHASE 2: MANUAL FLIGHT CONTROL Final Report

Walter B. Gartner and Kenneth M. Baldwin Washington NASA Dec. 1973 83 p. refs

(Contract NAS2-6460)

(NASA-CR-2359) Avail: NTIS HC \$3.75 CSCL O5E

A study of the display requirements for final approach management of the space shuttle orbiter vehicle is presented. An experimental display concept, providing a more direct, pictorial representation of the vehicle's movement relative to the selected approach path and aiming points, was developed and assessed as an aid to manual flight path control. Both head-up, windshield projections and head-down, panel mounted presentations of the experimental display were evaluated in a series of simulated orbiter approach sequence. Data obtained indicate that the experimental display would enable orbiter pilots to exercise greater flexibility in implementing alternative final approach control strategies. Touchdown position and airspeed dispersion criteria were satisfied on 91 percent of the approach sequences. representing various profile and wind effect conditions. Flight path control and airspeed management satisfied operationallyrelevant criteria for the two-segment, power-off orbiter approach and were consistently more accurate and less variable when the full set of experimental display elements was available to the pilot. Approach control tended to be more precise when the head-up display was used; however, the data also indicate that the head-down display would provide adequate support for the manual control task.

N74-13818\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

REFERENCE APPARATUS FOR MEDICAL ULTRASONIC TRANSDUCER Patent Application

Robert D. Lee, Robert J. Hudock, and Dale I. Shute, inventors (to NASA) Filed 21 Dec. 1973 18 p

(NASA-Case-ARC-10753-1; US-Patent-Appl-SN-427395) Avail: NTIS HC \$3.00 CSCL 06B

A portable minieture ultrasonic transducer positioning apparatus is described having a transducer receiving sleeve coupled to a pair of orthogonally orientated, independently pivotable yokes. The yokes are pivotably mounted to a base member the under surface of which is fitted with a non-skid rubber cap. A pair of potentiometers are coupled to the axes of the yokes and to a dual meter sleeve position indicator for indicating the angular position of a probe slidably fitted in the sleeves. An oscilloscope or similar signal display device is coupled to the probe for providing signal readout from the probe for use in ultrasonic cardiology oscilloscope studies.

N74-13819\*# National Aeronautics and Space Administration.
Marshall Space Flight Center, Huntsville, Ala.
METABOLIC ANALYZER

Cortes L. Perry 26 Dec. 1973 28 p

(NASA-TM-X-64797) Avail: NTIS HC \$3.50 CSCL 06B

An apparatus is described for the measurement of metabolic rate and breathing dynamics in which inhaled and exhaled breath are sensed by sealed, piston-displacement type spirometers. These spirometers electrically measure the volume of inhaled and exhaled breath. A mass spectrometer analyzes simultaneously for oxygen, carbon dioxide, nitrogen, and water vapor. Circuits responsive to the outputs of the spirometers, mass spectrometer, temperature, pressure, and timing signals compute oxygen consumption, carbon dioxide production, minute volume, and respiratory exchange ratio. A selective indicator provides for readout of these data at predetermined cyclic intervals. Author

N74-13820# Army Aviation Systems Test Activity, Edwards AFB. Calif.

STUDY: PILOT PERCEIVED JETTISON ENVELOPE Final

Albert L. Winn and James S. Kishi Jun. 1973 29 p refs (AD-768171: USAASTA-71-03) Avail: NTIS CSCL 05/10

The OH-6A, OH-58A, and AH-56A helicopters were evaluated to determine pilot sensed sideslip cues with respect to their influence on the jettison of external stores. The data were necessary to confirm previous studies with the UH-1C and CH-47C helicopters, and to expand the data to other helicopters and operating conditions. Tests were conducted at the United States Army Aviation Systems Test Activity, Edwards Air Force Base, California and at Yuma Proving Ground, Arizona. Additionally, data previously obtained for other test helicopters were analyzed to determine variation in static lateral-directional stability with altitude, gross weight, rotor speed, and center-of-gravity location. Results confirm that side force is the most significant cue to pilot recognition of uncoordinated flight. The pilots evaluation of side force was consistent for all aircraft and all test cases. During this evaluation, the pilots recognized lower side force values than during the UH-1C and CH-47C evaluations. Data analysis shows helicopter side-force characteristics to be relatively independent of atmospheric or operating conditions other than airspeed and sideslip angle. Helicopter lateraldirectional stability characteristics and pilot recognition of side force can be combined to predict a minimum required jettison envelope for theoretical or actual flight vehicles. This procedure can be used for early definition of problem areas and to reduce the cost and risk associated with establishing flight envelopes.

Author (GRA)

N74-13821# Dunlap and Associates, Inc., Inglewood, Calif. Western Div.

EFFECT OF A PREDICTOR DISPLAY ON CARRIER LANDING PERFORMANCE. PART 2: LABORATORY MECHANIZATION Final Report

Louis E. Ehrhardt, Frank R. Cavallero, and Robert S. Kennedy Jun. 1973 44 p. refs. 2 Vol.

(Contract N00014-71-C-0252; NR Proj. 196-106)

(AD-767983) Avail: NTIS CSCL 05/9

A three-phase program was conducted to determine the effect of a predictor display on carrier landing performance. Part 2 describes the laboratory mechanization for the experiment in detail. Pilot's night carrier landing approach performance was measured as altitude and lateral error from glideslope and centerline using the predictor display, the baseline display and a glideslope reference element of the predictor display. The predictor display proved to be superior to the baseline display. It reduced vertical and lateral error variability during approach, increased the number of approaches within a joint FLOLS/lateral error envelope, increased the number of acceptable approaches and produced approaches less variable than those observed in the fleet. The baseline display was found to be a valid simulation of the night carrier landing task. The glideslope reference element was found to contribute to the superiority of the predictor display but was judged inadequate as an independent display. Further development of the predictor display for introduction to the fleet is recommended. (Modified author abstract) GRA

N74-13822# Dunlap and Associates, Inc., Inglewood, Calif. Western Div.

EFFECT OF A PREDICTOR DISPLAY ON CARRIER LANDING PERFORMANCE. PART 1: EXPERIMENTAL EVALUATION Final Report

Joseph W. Wulfeck, Daniel J. Prosin, and William J. Burger Jun. 1973 93 p. refs. 2 Vol.

(Contract N00014-71-C-0252; NR Proj. 196-106)

(AD-767982) Avail: NTIS CSCL 05/9

A three-phase program was conducted to determine the effect of a predictor display on carrier landing performance. Phase A consisted of display development. Phase B consisted of display mechanization, informal preliminary experimentation and development of a detailed design for a formal experiment in Phase C to compare the predictor to a baseline display in a fixed-based F4 simulator with carrier qualified pilots as subjects. The report concludes the program. Part I presents the results of the experiment conducted in Phase C. (Modified author abstract)

N74-13823# McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.

DEFINITION OF REVERSE OSMOSIS REQUIREMENTS FOR SPACECRAFT WASH WATER RECYCLING

David F. Putnam and George W. Wells Nov. 1972 165 p

(Contract DI-14-30-3062)

(PB-222943/3; MDC-G3780; Int-OSW-RDPR-73-861) Avail: NTIS HC \$10.25 CSCL 06K

The report defines and evaluates a six-man, reverse osmosis wash water recovery system that offers the dual advantages of lower equivalent weight and lower cost than competing wash water recovery techniques. The system meets the basic requirements of the advanced Skylab, the MDAC six man modular space station, and the Space Station Prototype (SSP) program. This report contains in-depth discussions of these major design considerations: Wash water requirements: compatible cleansing agents; A theoretical estimate of the contaminants found in wash water; A standard procedure for producing used wash water. Wash water standards. (Modified author abstract)

N74-14793\*+ George Washington Univ., Washington, D.C. Medical Center.

BIOMAGNETISM: A ANNOTATED BIBLIOGRAPHY Biological Sciences Communication Project

Louise A. Manganelli Feb. 1972 193 p refs

(Contract NSR-09-010-027) (NASA-CR-136616; GW-BSCP-72-04R) Avail: NTIS

HC \$11.75 CSCL 06P

The bibliography consists of 161 annotated references on the subject of the biological effects of magnetic fields. The publications cited cover a period from 1967 through 1971. The references include research on plants, animals and humans exposed to field strengths ranging from null through geomagnetic, low, and high intensities. Variations in field orientation, exposure time and field gradient are noted where possible. Applications relevant to spaceflight are included; clinical observations and therapeutic applications are also noted.

N74-14794# Joint Publications Research Service, Arlington,

SPACE BIOLOGY AND MEDICINE, VOLUME 7, NO. 6. 1973

18 Jan. 1974 127 p refs Transl, into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, vol. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 84 p (JPRS-61020) Avail: NTIS

Biological and medical factors of the aerospace environment are considered with emphasis on radiation, acceleration, and hypokinetic effects on man.

N74-14795 Joint Publications Research Service, Arlington, Va. ANALYSIS OF THE RESULTS OF AN INVESTIGATION OF THE BIOLOGICAL EFFECT OF HEAVY IONS WITH DIFFERENT LINEAR ENERGY LOSSES ON THE BASIS OF A THEORETICAL INACTIVATION MODEL (INTERPRETATION OF EXPERIMENTS WITH E. COLI)

K. Guenther, Ye. A. Krasavin, Ye. I. Kudryashov, N. I. Ryzhov, and W. Schultz *In its* Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 1-7 ref Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 3-8

The data obtained from experimental irradiation of E. coliwith heavy ions having different linear energy losses, protons and gamma rays are analyzed from the point of view of a theoretical model of cell inactivation. It is indicated that using the model it is possible to determine the relative biological effectiveness of any radiation, including mixed types, and radiation modified by various factors when limited experimental data are available.

Author

## N74-14796 Joint Publications Research Service, Arlington, Va. PHOTOBIOLOGICAL PROCESSES AND CRITERIA OF EXISTENCE OF LIVING SYSTEMS

A. B. Rubin In its Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p.8-14 refs Transt into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 5, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p.8-13

The role of light in the formation and evolution of living systems is discussed. It is concluded that the light flux is necessary for the support and development of life on the planet. Photobiological criteria for the existence of life are suggested.

Author

## N74-14797 Joint Publications Research Service, Arlington, Va. MATHEMATICAL EVALUATION OF RELIABILITY OF FUNCTIONING OF THE BIOLOGICAL LINK IN A BIOENGINEERING SYSTEM

I. A. Shvytov In its Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p. 15-20 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p. 13-17

Reliability of the biological link in a bioengineering system is discussed. The use of an artificially cultivated microbial population is described. A criterion for assessing the reliability of functioning of the biological link is proposed. A method for computing the value of the criterion is formulated. Numerical calculations of the value of the reliability criterion are presented in relation to certain regimes in functioning of the biological link.

### N74-14798 Joint Publications Research Service, Arlington, Va. RESPIRATION OF POIK!LOTHERMIC ANIMALS IN A HELIUM-OXYGEN ATMOSPHERE

Ye. B. Kanevskaya, A. B. Zimin, and P. V. Matekin. *In its* Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 21-23 refs Transl into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 17-19

The Warburg manometric method was used in determining the oxygen consumption of Chyronomus plumosus L. larvae in the air and in a helium-oxygen atmosphere. The use of helium instead of nitrogen did not affect the gas exchange of Chyronomus larvae. This may be accounted for by a low temperature gradient between poikilothermic animals and the surrounding medium.

Author

## N74-14799 Joint Publications Research Service, Arlington, Va. INFLUENCE OF NATURE OF DISTRIBUTION OF ABSORBED DOSE ON RADIATION DAMAGE

G. M. Avetisov, V. N. Budylin, V. G. Gorlov, and V. S. Grammatikati In its Space Biol, and Med., Vol. 7, No. 5, 1973 (JPRS-61020) 18 Jan. 1974 p 24-34 refs Transl, into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 19-26

The effect of damage by bilateral X-radiation of 7-8 keV and 12 keV was studied using 260 rats. The distribution of absorbed dosages in the animal body and in different radiosensitive organs was investigated. The contribution of the hemopoietic syndrome, the gastrointestinal syndrome and skin injuries to total biological effect is discussed on the basis of a comparative examination of clincial manifestations of radiation damage as related to the distribution of the absorbed doses in the tissues and organs.

## N74-14800 Joint Publications Research Service, Arlington, Va. CHANGE IN INTENSITY OF ULTRAVIOLET FLUORESCENCE OF BLOOD LEUKOCYTES IN DOGS SUBJECTED TO CHRONIC IRRADIATION

S. N. Aleksandrov, V. G. Safronova, and A. S. Yagunov In its Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 35-41 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 27-31

The intensity of ultraviolet fluorescence of lymphocytes and neutrophils of dogs exposed to chronic gamma irradiation (at dose rates of 0.06, 0.17 and 0.34 rad/day) was studied. The intensity of UV fluorescence increased gradually at doses of 0 to 70 rad. The intensity remained at a constant level that was significantly higher than the control at doses of 70 to 300 rad. The intensity decreased with a further dose increase. It is suggested that the decline in the fluorescence level of blood leukocytes is associated with the appearance in the bone marrow of radioresistant cells producing leukocytes with a normal fluorescence intensity. This parameter was high at every dose tested (up to 740 rad) in the case of a combined effect of chronic irradiation and acute irradiation.

## N74-14801 Joint Publications Research Service, Arlington, Va. CYTOGENETIC INVESTIGATIONS OF BLOOD LEUKOCYTES CARRIED OUT WITH CREW MEMBERS OF THE SOYUZ SPACE SHIPS

N. N. Bobkova and T. N. Krupina In its Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 42-47 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 31-35.

The results of cytogenetic investigations of ten crew members of Soyuz spacecraft before and after spaceflights are presented. Chromosomes were studied in a culture of peripheral leukocytes. No cytogenetic changes were noted on the first postflight day in comparison with the preflight data. Another examination carried out after three weeks of the postflight period exhibited no statistically significant differences in the frequency of structural aberrations of chromosomes in three cosmonauts in comparison with the preflight data. An aneuploidic analysis revealed 15-25% hypoploidal cells in one of the cosmonauts subjected to four investigations during three years. A karyotype analysis did not confirm the occurrence of mosaicism.

## N74-14802 Joint Publications Research Service, Arlington, Va. STUDY OF REACTIVITY OF BLOOD LYMPHOID CELLS IN CREW MEMBERS OF THE SOYUZ-6, SOYUZ-7 AND SOYUZ-8 SPACESHIPS BEFORE AND AFTER FLIGHT

I. V. Konstantinova, Ye. N. Antropova; V. I. Legenkov, and V. D. Zazhirey In its Space Biol, and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18-Jan. 1974 p 48-55 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 35-40

Postflight examinations of five spaceship crew members revealed a decline in the radioactivity of immunocompetent lymphocytes (T-cells) of four cosmonauts. They revealed a delay in blatogenesis at the stage of transformation of small lymphocytes into PHA-cells. As a rule, the transformation delay was accompanied by an inhibition of the rate of RNA synthesis. The relationship which may exist between these changes and disturbances in the hormonal balance and changes in potassium and calcium metabolism is discussed. The conclusion is drawn that the method of PHA blastoid transformation, which is a functional test indicating a state of the cell population that performs important functions in protecting the human body against infection, is very informative.

N74-14803 Joint Publications Research Service, Arlington, Va. CHANGE IN IMMUNOLOGICAL REACTIONS IN HUMAN SUBJECTS UNDER THE INFLUENCE OF UNFAVORABLE MICROCLIMATIC CONDITIONS IN A PRESSURIZED CHAMBER

V. A. Kolotvin, R. Ye. Livshits, Mt. A. Nevstruyeva, S. I. Tarasov, and V. Mt. Shubik. *In its* Space Biol. and Med., Vol. 7, No. 6, 1973. (JPRS-61020) 18 Jan. 1974. p. 56-60 refs. Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973." Moscow, Med. Izd., Nov.-Dec. 1973. p. 40-43.

Test subjects who lived in a pressurized chamber under conditions of an unfavorable climate, modified atmosphere and restricted diets were examined. Bactericidal activity, surface and deep skin automicroflora, titer of saliva lysozyme and the content of C-reactive protein were studied. The content of saliva lysozyme and skin bactericidal activity decreased or changed in a phaselike pattern. Humoral factors of nonspecific immunity changed insignificantly.

### N74-14804 Joint Publications Research Service, Arlington, Va. CHANGE IN THE EXTERNAL RESPIRATION FUNCTION DURING MOTION SICKNESS

V. K. Stepanov, I. A. Sidelnikov, and G. I. Pavlov *In its* Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 61-65 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 44-47

Changes in the external respiration function of subjects with various vestibular tolerances to Coriolis accelerations were studied. Among them there were 12 intolerant subjects (fourth degree), 14 with moderate vestibular tolerance (third-second degree) and five with a high tolerance (first degree). All the test subjects were exposed to Coriolis accelerations which were continuously accumulated. Persons with a high tolerance to Coriolis accelerations exhibited no significant changes in external respiration during the exposure. Intolerant subjects exhibited hyperventilation which led to a slight decrease in PACO2. Changes in external respiration parameters may serve as an additional index of the vestibular tolerance level.

Author

### N74-14805 Joint Publications Research Service, Arlington, Va. INFLUENCE OF TRANSVERSE ACCELERATIONS ON THE ACTIVITY OF HUMAN SERUM CHOLINESTERASE

Ye. M. Semina and I. D. Vertanov In its Space Biol. and Med., Vol. 7, No. 6, 1973 [JPRS-61020] 18 Jan. 1974 p 66-71 refs. Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 47-51

The activity of serum cholinesterase of man exposed to back-to-chest accelerations imparted at an angle of 78 to the longitudinal axis of the body was evaluated. Enzyme activity increased during an exposure up to 8 g (imparted for 60 sec), remained unchanged during an exposure to 10 g and 12 g (imparted for 60 and 35 sec respectively), and decreased during exposure to 14 g (imparted for 20 sec). The results obtained suggest that the effect of back-to-chest accelerations of 8 g for 60 sec enhances the liver proteosynthetic function. The reason for the decrease in cholinesterase activity during exposure to accelerations of 14 g for 20 sec remains obscure.

# N74-14806 Joint Publications Research Service, Arlington, Va. EFFECT OF VESTIBULAR TESTS ON ORIENTATION RELATIVE TO THE VERTICAL IN HEALTHY AND DEAFMUTE SUBJECTS

B. B. Bokhov, I. Ya, Yakovlev, L. N. Kornilova, A. A. Guyev, A. A. Kravchenko, and V. A. Ryabichev *In its* Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 72-79 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 51-56

The influence of expert tests -- swinging in swings and rotation with tilts -- on the capability of healthy and deaf-mute subjects to determine position of the gravitational vertical was studied by using an instrument with a rotating luminescent line. The results of an investigation of healthy test subjects revealed that swinging causes more clearly expressed shifts in perception correlating with autonomic reactions than rotation with tilts, after

which such correlation was not observed. In deaf-mute subjects after rotation with tilts there were no shifts in perception, even if rotation was accompained by autonomic reactions.

Author

# N74-14807 Joint Publications Research Service, Arlington, Va. DETERMINING EXCESS PRESSURE ON THE LOWER PART OF THE BODY ENSURING PREVENTION OF ORTHOSTATIC IMPAIRMENTS

B. F. Asyamolov, V. S. Panchenko, I. D. Pestov, and M. A. Tikhonov In its space Biol. and Med., Vol. 7. No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 80-87 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 56-61

Lower body positive pressure applied by means of an antigravity suit decreased orthostatic reactions of test subjects exposed to simulated weightlessness (18-hour water immersion, 30-day bed rest). Lower body positive pressure of 50 and 35 mm Hg proved to be effective and well tolerated whereas that of 20 mm Hg proved to be inadequate for preventing orthostatic disturbances. The greatest effect in the prevention of orthostatic disturbances was achieved by a combination of different countermeasures.

## N74-14808 Joint Publications Research Service, Arlington, Va. ORTHOSTATIC STABILITY IN AN EXPERIMENT WITH 30-DAY HYPODYNAMIA

V. S. Georgiyevskiy, V. A. Gornago, L. Ya. Divina, N. D. Kalmykova, V. M. Mikhaylov, V. I. Plakhatnyuk, Yu. D. Pometov, V. V. Smyshlyayeva, N. D. Vikharev, and B. S. Katkovskiy In its Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 88-97 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 61-68

Nine test subjects were kept for 30 days in bed with their heads tilted 4 deg downwards. At the end of the experiment they exhibited a decrease in orthostatic stability. The use of different countermeasures, including physical exercises and lower body negative pressure (LBNP), considerably improved their orthostatic stability. Electric stimulation of the muscles also produced a preventive effect, although to a lesser extent. It should be expected that a combination of physical exercises. LBNP and electric stimulation of the muscles during prolonged space flight may exert a positive effect on orthostatic stability.

Author

# N74-14809 Joint Publications Research Service, Arlington, Va. COMPARATIVE INVESTIGATIONS OF TEMPERATURE IN DIFFERENT REGIONS OF THE HUMAN BODY DURING BODY OVERHEATING

A. N. Azhayev and D. G. Maksimov In its Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 98-103 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 68-72

Comparative studies of body temperature in the rectum, mouth, armpits and on the head (behind the ears) revealed that at a high ambient temperature and with overheating of the human body temperature measurements of the thermally insulated area of the head surface clearly indicated overheating of the subject. The difference in the head and rectal temperatures decreased substantially (to 0.15-0.20 C) under these conditions. Accordingly, normal methods for evaluating head temperature are applicable. Temperature measurement in the head area has advantages over measurement in other parts of the body because it appears to be simple and reliable during occupational activities.

N74-14810 Joint Publications Research Service, Arlington, Va. MINERALIZATION OF HUMAN BONE TISSUE UNDER WATER IMMERSION CONDITIONS (ROENTGENOPHOTOMETRIC INVESTIGATION)

K. I. Murakhovskiy and L. Z. Golod. In its Space Biol. and

Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 104-108 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina; v. 7, no. 6, 1973" Moscow. Med. Izd., Nov. Dec. 1973 p 72-75

The effect of five day water immersion on the mineral content of bones was studied in subjects when wearing and not wearing a prophylactic load suit. The bone mineral content was measured roentgenophotometrically in milligrams of Ca per 1 cu mm before and on the second day of immersion. The objects studied were the navicular bone, ankle bone, heel bone, distal metadiaphysis of the hip bone and proximal metadiaphysis of the tibia. In experiments without the suit the level of bone density in the studied areas decreased by 4-8%. Statistical analysis revealed that the decrease was significant with P = 0.95. A comparison of the significance of the differences between bone density changes in experiments with and without the suit demonstrated that they are statistically significant for the navicular bone, ankle bone and heel bone and not significant for the tubular bones.

Author

N74-14811 Joint Publications Research Service, Arlington, Va. WAYS TO INCREASE THE NOISE IMMUNITY OF A SYSTEM FOR REGISTERING THE BIOELECTRIC POTENTIALS OF MAN UNDER THE INFLUENCE OF PROLONGED ACCELERATIONS

L. N. Nikołskiy In its Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 109-117 refs Transl. into ENGLISH of the periodical "Kosmicheskaya Biologiya i Meditsina, v. 7, no. 6, 1973" Moscow, Med. Lad., Nov.-Dec. 1973 p 75-81

The nature of the specific interference arising under experimental conditions on acceleration stands during the registry of electric potentials of the heart, brain and skeletal muscles in man and the effectiveness of some protective measures are studied. Analysis of the conditions for registry of biopotentials and the results of special investigations of the nature of the interference and the experimental data (EKG, EEG, EMG), obtained in investigations with acceleration stands (centrifuges of different radii, vibration stands, stands for imparting sign-variable accelerations and angular accelerations), made it possible to detect the principal types of interference and described their characteristics.

N74-14812 Joint Publications Research Service, Arlington, Va. ROLE OF CEREBELLUM IN VESTIBULAR-CARDIAC REACTIONS DURING MOTION SICKNESS IN LOWER MONKEYS

A. S. Markin In its Space Biol. and Med., Vol. 7, No. 6, 1973 (JPRS-61020) 18 Jan. 1974 p 118-121 refs Transl. into ENGLISH of the periodical "Kosmicheskya Biologiya i Meditsina. v. 7, no. 6, 1973" Moscow, Med. Izd., Nov.-Dec. 1973 p 82-84

Changes in pulse rate at the time of motion sickness were studied with electric stimulation of some structural formations in the cerebellum in monkeys. Results show that stimulation of the cortex and nuclei of the cerebellum during prolonged swinging of the monkeys and at the time immediately following motion in swings, were in reciprocal relationships to the effect on cardiac reflex activity.

Author

N74-14813\*# National Aeronautics and Space Administration. Wallops Station, Wallops Island, Va.

REGULATORY BIOLOGY: DEPRESSED METABOLIC STATES

Emily Morey Holton, ed. Aug. 1973 181 p. refs. Symp. held at Wallops Island, Va., 18-20 Oct. 1971

(NASA-TM-X-69354) Avail: NTIS HC \$11.25 CSCL 06P

Exobiological aspects of depressed metabolism and tharmoregulation are discussed for subsequent development of biological space flight experiments. Included is a brief description of differential hypothermia in cancer chemotherapy. N74-14814\* National Aeronautics and Space Administration, Washington, D.C.

THE ROLE OF DEPRESSED METABOLISM IN SPACE BIOLOGY: AN OVERVIEW

Joseph Saunders In its Regulatory Biol.: Depressed Metab. Aug. 1973 p 1-22 CSCL 06P

Organization and research activities of the entire NASA Space Biology Program are outlined. Various technical approaches are reported to study depressed metabolism particularly in the situation of 100% oxygen and reduced ambient pressures. These include hibernation and hypothermia, thermal regulation, and diluent gases. G.G.

N74-14816\* National Aeronautics and Space Administration.

Ames Research Center, Moffett Field, Calif.

EFFECT OF ARTIFICIAL GRAVITY ON THERMOREGULATION, RESPIRATORY METABOLISM AND INTERMEDIARY METABOLISM OF ANIMALS

Jiro Oyama In its Regulatory Biol.: Depressed Metab. Aug.

Jiro Oyama In its Regulatory Biol.: Depressed Metab. Aug 1973 p 27-51 refs CSCL 06P

Metabolic alterations in animals exposed to radial acceleration are reported. Temperatures in acutely stressed animals dropped profoundly in correlation with decreased food consumption. Repeated exposure of the acutely stressed animal caused a decrease in hypothermic response whereas deceleration or reduction of G load did not significantly change body temperatures. Adrenal corticosteroids affected signicantly the animal's recovery rate. No changes occured in body temperature patterns of chronically centrifuged animals after full adaptaion; their respiratory rate increased very significantly in terms of CO2 output as did their glucose uptake by muscle tissues and their insulin responsiveness or sensitivity.

G.G.

N74-14817\* Colorado State Univ., Fort Collins.

METABOLIC EFFECTS OF ARTIFICIAL ENVIRONMENTS

John Patrick Jordan In NASA. Wallops Station Regulatory

Biol.: Depressed Metab. Aug. 1973 p 52-72 refs

CSCL 06P

Effects of diluent gases on the metabolism of animals breathing nitrogen-oxygen, argon-oxygen, and helium-oxygen mixtures were studied. Results show that helium actually affected the mean free path of oxygen across the alveoli and increased metabolic rate. It is speculated that it might be necessary to keep an astronaut in a depressed metabolic state during prolonged space flight by using an argon-oxygen or a xenon-nitrogen mixture for breathing. Replacement of the depressant gases during periods requiring critical spacecraft maneuvers by neon-oxygen mixtures would insure maximal performance. G.G.

N74-14818\* Missouri Univ., Columbia. Space Sciences Research Center.

HIBERANATION, SLEEP, AND THERMOREGULATION
Frank E. South In NASA. Wallops Station Regulatory Biol.
Depressed Metab. Aug. 1973 p 73-90 refs

CSCL 06P

Nerve activity adaptation to hypothermia and the differences in CNS activity during hypothermia are studied on marmots. Thermoregulatory experiments on hibernating animals indicated a sympathetic response. G.G.

N74-14819\* Missouri Univ., Columbia. Space Sciences Research Center.

RADIOPROTECTION IN DEPRESSED METABOLIC STATES: THE PHYSIOLOGY OF HELIUM-COLD HYPOTHERMIA X. J. Musacchia In NASA. Wallops Station Regulatory Biol.: Depressed Metab. Aug. 1973 p 91-118 refs

CSCL 06S

The use of hypothermia as a means of radiation protection was studied on a variety of mammals exposed to 80% helium-20% oxygen atmospheres at low ambient temperatures. Results show

that the LD for normothermic animals significantly increased compared with hypothermic animals; similar results were obtained for hibernating mammalians. Pre-exposure of animals to cold temperatures increased their ability to withstand radiation levels close to LD sub 50.

N74-14820\* Institute for Lipid Research, Berkeley, Calif.
INTERMEDIARY METABOLISM DURING BRIEF AND
PROLONGED LOW TISSUE TEMPERATURE

Cecil Enternan In NASA. Wallops Station Regulatory Biol.: Depressed Metab. Aug. 1973 p 119-138 refs

CSCL 06S

The intermediary metabolism of the depressed metabolic state in the hypothermic hamster and the hibernating ground squirrel was studied by observing acetate and palmitic acid metabolisms in their tissues. The oxidative metabolism seemed to be dominant in the depressed state although synthetic reactions such as fat synthesis proceeded in some cases at a faster rate than normothermic metabolism for the same tissues. Fat syntheses proceeded in all tissues with brown fat and liver especially active. Enzymes for the synthesis of cholesterol seemed to be more temperature sensitive than enzymes for fatty acid synthesis. It was concluded that there are no great differences between metabolisms in hypothermic and hibernating animals.

N74-14821\* California Univ., Davis. School of Veterinary Medicine.

THE ROLE OF BROWN ADIPOSE TISSUE IN TEMPERATURE REGULATION

Robert Em. Smith In NASA. Wallops Station Regulatory Biol.: Depressed Metab. Aug. 1973 p 139-157 refs

CSCL 06P

The thermogenetic capacities of brown adipose tissue were studied on marmots, rats and monkeys in response to cold exposure. All experiments indicated that the brown fat produced heat and slowed the cooling of tissues.

G.G.

N74-14822\* Emory Univ., Atlanta, Ga. Medical School.
METHODS FOR STUDY OF CARDIOVASCULAR ADAPTATION OF SMALL LABORATORY ANIMALS DURING
EXPOSURE TO ALTERED GRAVITY

Vojin Popovic In NASA. Wallops Station Regulatory Biol.: Depressed Metab. Aug. 1973 p 158-177 refs

CSCL 06P

Several new techniques are reported for studying cardiovascular circulation in small laboratory animals kept in metabolic chambers. Chronical cannulation, miniaturized membrane type heart-lung machines, a prototype walking chamber, and a fluorocarbon immersion method to simulate weightlessness are outlined. Differential hypothermia work on rat cancers provides localized embedding of radionuclides and other chemotherapeutical agents in tumors and increases at the same time blood circulation through the warmed tumor as compared to the rest of the cold body. Some successful clinical applications of combined chemotherapy and differential hypothermia in skin cancer, mammary tumors, and brain gliomas are described.

N74-14823\*# Kanner (Leo) Associates, Redwood City, Calif. PROBLEMS OF SPACE BIOLOGY. VOLUME 20. MATHEMATICAL MODELS OF BIOLOGICAL SYSTEMS

Yu. M. Svirezhev and Ye. Ya. Yelizarov Washington NASA Nov. 1973 185 p refs Transl, into ENGLISH of the book "Problemy Kosmicheskoy Biologii. Tom 20: Matematicheskoye Modelirovaniye Biologicheskikh Sistem" Moscow, Nauka, 1972 160 p

(Contract NASw-2481)

(NASA-TT-F-780) Avail: NTIS HC \$5.25 CSCL 06F

Well-known mathematical models are used to model population associations, biocoenoses, biogeocoenoses and artificial biological associations. The optimal yield concept is defined in relation to the optimal productivity of an association. The optimal productivity problem is solved for the simplest types of associa-

tions, such as a homogeneous population in a chemostat and also in more complex cases, for example, for an association of the predator-prey type. The simplest models are generalized to cases in which it is necessary to take into consideration the distribution of individuals in the population by age, size, etc. The models are described by systems of differential equations. The optimal policies are obtained using dynamic programming methods, nonlinear programming methods and the Pontryagin maximum principle. Optimal steady state strategies are also obtained.

N74-14824\*# Naval Aerospace Medical Research Lab., Pensacola, Fla.

THE VALUE OF EXERCISE AT ONE-HALF EARTH GRAVITY IN PREVENTING ADAPTATION TO SIMULATED WEIGHT-LESSNESS

John Hoche and Ashton Graybiel 25 Jun. 1973 23 p refs (NASA Order T-5904-B)

(NASA-CR-136569; AD-767646; NAMRL-1191) Avail: NTIS HC \$3.25 CSCL 06/14

Twelve male subjects participated in two identical series to determine the value of exercising four hours daily at one-half earth gravity (simulated) to prevent loss of exercise capacity and orthostatic tolerance when exposed to 14 days of simulated weightlessness. In one series four subjects exercised at half-gravity (HGE subjects) on treadmills mounted in a human centrifuge and four exercised on treadmills mounted on inclined planes; in the other series the subjects switched exercise devices. Four subjects served as no-exercise controls throughout both series. Additional measurements included: plasma volume and red cell mass, urinary sodium and potassium, and peripheral renin activity. The results are discussed in terms of their significance for long-range plans involving the use of artificial gravity as a countermeasure on space missions. (Modified author abstract) GRA

N74-14825\*# Scripta Publishing Corp., Washington, D.C.
THE EFFECT OF PHYSICAL EXERCISE ON BINDING OF
CORTICOSTEROIDS BY TRANSCORTIN IN PLASMA

A. F. Bunyatyan and V. P. Erez. NASA. Jan. 1974 – 10 p. refs Transl. into ENGLISH from Prob. Endok. (Moscow), v. 18, 1972 p. 13-17

(Contract NASw-2484)

(NASA-TT-F-15258) Avail: NTIS HC \$3.00 CSCL 06S

The content of protein-bound and free forms of 11-OCS, and also the binding capacity of transcortin were examined in 11 healthy highly-qualified athletes who were in condition of chronic physical overexertion during the examination; 12 healthy untrained men were also observed (control group). Determinations were made in the state of rest and during four-day veloergometric exercises. During rest the processes of steroid-protein interaction in healthy athletes coursed normally; this caused a considerable prevalence of transcortin-bound fraction over the free form of the hormones. During maximal physical exertion healthy athletes displayed a reduction of transcortin-binding capacity in vitro, to the level of protein-bound conticosteroids in the blood of persons investigated. Possible mechanisms involved in development of the mentioned changes are discussed. Author

N74-14826\*# Kanner (Leo) Associates, Redwood City, Calif. EFFECT OF PROLONGED HYPOKINESIA ON CERTAIN FUNCTIONS OF THE OTORHINOLARYNGOLOGICAL ORGANS

I. Ya. Yakovlev, V. P. Baranov, and E. I. Matsnev Washington NASA Jan. 1974 17 p refs Transl. into ENGLISH from Vestn. Otorinolaringol. (Moscow), v. 6, no. 6, 1967 p 45-51 [Contract NASw-2481)

(NASA-TT-F-15275) Avail: NTIS HC \$3.00 CSCL 06S

The functional state of otorhinolaryngological organs was studied in six persons in restricted mobility for a period of 62 days. The occurrence of otorhinolaryngological morbidity was noted on the second month of restricted mobility (tonsillitis, catarrh of the upper respiratory tract, acute pharyngitis, nasal bleeding). The subjects revealed circulatory disturbances in the

nasal mucous membrane, increased dystrophy of the mucous membranes of the upper respiratory tract, reduced auditory sensitivity, and vestibulo-autonomic resistance. All the changes have an undulant dynamics and a period of sequelae. It is concluded that they were caused, to a certain degree, by hemodynamic shifts and general asthenia.

# N74-14827\*# Kanner (Leo) Associates, Redwood City, Calif. DRUG METABOLISM AND FOREIGN MATTER HYDROXYLASE (CYTOCHROME P-450) IN SEVERE HEPATIC DAMAGE IN MAN

H. F. VonOldershausen, B. Schoene, H. Held, H. P. Menz, R. A. Fleischmann, and H. Remmer Washington NASA Jan. 1974 11 p. refs. Transl. into ENGLISH from Z. Gastroenterol. (West Ger.), v. 11, 1973 p. 403-410 (Contract NASw-2481)

(NASA-TT-F-15276) Avail: NTIS HC \$3.00 CSCL 06F

In cases of severe hepatic damage (acute hepatitis, active hepatic cirrhosis), a significant reduction is found in the level of cytochrome P 450, in N and 0 demethylation, and in the activities of pseudocholinesterase and glucose-6-phosphate in human liver biopsy homogenates. Induction of cytochrome P 450, cytochrome C reductase and 0 demethylation is detected in liver homogenate after the administration of Rifampicin, Chlortritylimidazol or diphenylhydantoin and phenobarbital. The elimination of Rifampicin from the blood is markedly delayed in patients with acute hepatitis or hepatic cirrhosis. Half-life or tolbutamide significantly shortened in acute hepatitis; close correlation in vitro between bilirubin concentration and percentage of free tolbutamide. These findings illustrate the dependence of drug metabolism upon the concentration of microsomal enzyme systems in the liver.

## N74-14828\*# Kanner (Leo) Associates, Redwood City, Calif. STUDY OF VENOUS TONUS IN THE FOREARM DURING SIMULATED WEIGHTLESSNESS

D. Kaiser and O. H. Gauer Washington NASA Jan, 1974 3 p refs Transl into ENGLISH from Pflugers Arch. (West Ger.), v. 289, 1966 p R76-77

(Contract NASw-2481)

(NASA-TT-F-15228) Avail: NTIS HC \$3.00 CSCL 06P

A reduction in venous tonus, assumed to be partly a function of temperature, is observed directly after immersion in a thermally neutral bath. Several hours of immersion causes further relaxation of veins.

Author

## N74-14829\*# Kanner (Leo) Associates, Redwood City, Calif. WATER AND SALINE BALANCES DURING PROLONGED IMMERSION IN A WATER BATH

P. Eckert, C. Behn, O. H. Gauer, and K. Kirsch Washington NASA Jan. 1974 3 p refs Transl. into ENGLISH from Pflugers Arch. (West Ger.), v. 297, 1967 p R70-71 (Contract NASw-2481)

(NASA-TT-F-15229) Avail: NTIS HC \$3.00 CSCL 06P

Water and electrolyte elimination were studied during 48 hours' immersion. Initial water diuresis, increased hematocrit values, and increased plasma protein were observed. Results show that these processes sometimes failed to return to the normal levels during the immersion period.

Author

### N74-14830\*# Kanner (Leo) Associates, Redwood City, Calif. THE EFFERENT INNERVATION OF THE VESTIBULAR

G. Rossi Washington NASA Jan. 1974 15 p refs Transl. into ENGLISH from Acta Oto-Laryngol (Uppsala), V. 58. 1964 p 230-238

(Contract NASw-2481)

(NASA-TT-F-15231) Avail: NTIS HC \$3.00 CSCL 06P

The efferent innervation of the vestibular receptors is discussed in the light of current literature and personal experimental findings. Recent studies are reviewed which have demonstrated that nerve fibers subject to actylcholine sterase activity exist in the acoustic crests and otolithic membranes and that these are efferent fibers. The research is based on the fact that the coeffear efferent fibers forming the intraganglionic spiral tract can be distinguished from the afferent fibers by the positivity of the former to an

acetylcholine sterase reaction. Attempts are made to find whether this difference also applies to the vestibular efferent fibers and the afferent fibers.

Author

N74-14831\*# Exotech Systems, Inc., Falls Church, Va. SCIENTIFIC AND TECHNICAL SERVICES DIRECTED TOWARD THE DEVELOPMENT OF PLANETARY QUARANTINE MEASURES FOR AUTOMATED SPACECRAFT Quarterly Report, period ending 31 Dec. 1973

7 Jan. 1974 6 p

(Contract NASw-2503)

(NASA-CR-136613; QR-3) Avail: NTIS HC \$3.00 CSCL

The research is briefly reported for each task area of the planetary quarantine program. Author

N74-14832\*# Techtran Corp., Glen Burnie, Md.
CERTAIN RESULTS OF THE MEDICO-BIOLOGICAL
INVESTIGATION CONDUCTED IN THE GEMINI AND
APOLLO PROGRAMS: CHANGE IN WEIGHT AND INDICES
OF THE CARDIOVASCULAR SYSTEM IN ASTRONAUTS
V. J. Kopanev and Ye. M. Yuganov Washington NASA Jan.
1974 28 p refs Transl. into ENGLISH from Izv. Akad. Nauk
SSSR, Ser. Biol. (Moscow), no. 5, 1973 p 629-646
(Contract NASW-2037)

(NASA-TT-F-15261) Avail: NTIS HC \$3.50 CSCL 06P

It was found that the weight of the astronauts decreased during flight and was rapidly restored afterward (1 to 2 days). The machanism of these changes is governed primarily by phenomena associated with dehydration of the organism. During postflight examination of the astronauts, a decrease in the orthostatic stability was observed as the result of the action of weightlessness. Following flights on which astronauts landed on the moon, there was less evidence of orthostatic disturbances. The changes that were observed involving the cardiovascular system constituted accommodative reactions to unusual spaceflight conditions.

## N74-14833\*# Techtran Corp., Glen Burnie, Md. MEASUREMENT OF THE STROKE VOLUME BY AN INTEGRAL RHEOGRAM OF THE HUMAN BODY

M. I. Tishchenko Washington NASA Jan. 1974 16 p refs Transl, into ENGLISH from Fiziol, Zh. SSSR (Moscow), v. 59, no. 8, Aug. 1973 p 1216-1224

(Contract NASw-2485)

(NASA-TT-F-15268) Avail: NTIS HC \$3.00

Two electrically short-circuited electrodes are applied to the distal areas of the forearm and two electrodes connected in the same fashion are applied to the distal areas of the shins. When the measuring arm of a bridge rheograph is connected between the paired electrodes of the upper and lower extremities, a curve is recorded which is the integral rheogram of the body. This curve reflects the total pulse variation of the electrical resistance of the vessels that are located between the electrodes and is caused primarily by the pulse variations in the volume of the large longitudinal arterial trunks. A formula was worked out to calculate the stroke volume of the left ventricle according to the anacrotic part of the integral rheogram. Data were obtained that are in agreement with the acetylene method, the method of thermodilution and the direct Fick method. The possibility of measuring the stroke volume for each cardiac contraction was Author established.

N74-14834\*# Techtran Corp., Glen Burnie, Md.
SOME RESULTS OF BIOMEDICAL INVESTIGATIONS
CONDUCTED DURING THE GEMINI AND APOLLO
PROGRAMS (ALTERATIONS IN BLOOD AND SKELETAL
APPARATUS, MINERAL AND ELECTROLYTE METABOLISM

IN THE ASTRONAUTS)

V. I. Kopanev and Ye. M. Yuganov Washington NASA Jan 1974 18 p refs Transl into ENGLISH from Izv. Akad. Nauk SSSR, Ser. Biol. (Moscow), no. 6, Nov. - Dec. 1973 p 852-863

(Contract NASw-2485)

(NASA-TT-F-15270) Avail: NTIS HC \$3.00 CSCL 06S

It was found that in the course of postflight examinations individual astronauts showed certain changes involving the blood (decrease in erythrocyte mass, leucocytosis and so forth), skeletal structure (decrease in bone density), and mineral and electrolyte metabolism (washing out of calcium, iron, potassium and

N74-14835# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bad Godesberg (West Germany). fuer Flugmedizin.

QUALITATIVE IDENTIFICATION OF ORAL EFFECTIVE ANTIDIABETICA IN BLOOD SERUM OF HUMANS [QUA-LITATIVER NACHWEIS ORAL WIRKSAMER ANTIDIABET ICA IM BLUTSERUM DES MENSCHEN)

Gerhard Schaefer Porz, West Ger. 6 Jul. 1973 30 p. refs In GERMAN; ENGLISH summary (DLR-F8-73-88) Avail: NTIS HC \$3.50; DFVLR, Porz, West

Ger. 11.80 DM

For the medical evaluation of flying fitness in a latent diabetic and in order to control the observance of the regulation that no blood sugar depressing substances be taken by flying personnel, analytical procedures have to be developed by which all (known) oral effective antidiabetica in the blood (and, possibly, in the urine) can be estimated. The particular difficulty of a routine series analysis consists in the fact that these substances belong to different chemical classes of substances and, futhermore, are therapeutically active in extremely different doses. The pyrimidyl sulfonamide glycodiacine and the sulfoacid carbacide carbutamide. chlorpropamide and tolbutamide can be separated by thin layer chromatography to a great extent and can be estimated by their fluorescence or by their fluorescence quenching properties and by their color reactions. The identification of glibenclamide and glibornuride can probably be done spectrofluorometrically with a 5 ml sample of blood serum. The biguanides which can also fluorometrically be identified are rapidly eliminated in the urine so that spectrophotometrically the identification in urine seems suitable. Author (ESRO)

N74-14836# Human Factors Research, Inc., Goleta, Calif. MOTION SICKNESS INCIDENCE AS A FUNCTION OF THE FREQUENCY AND ACCELERATION OF VERTICAL SINU-SOIDAL MOTION Technical Report, 1 Jul. 1972 - 30 Jun. 1973

James F. Hanlon and Michael E. McCauley Sep. 1973 22 p. refs

(Contract N00014-73-C-0040; NR Proj. 105-661) (AD-768215; Rept-1733-1) Avail: NTIS CSCL 06/19

Fourteen experimental conditions of vertical sinusoidal motion were defined by combinations of wave frequency and acceleration level in a partial factorial design. The frequency range investigated was from 5 cycles per minute (CPM, or .083 Hz) to 30 CPM (.500 Hz), and the average acceleration over each half-wave cycle ranged from about .03 to .40 g. Independent groups of 20 or more male Ss were exposed for 2 hours or until they began to vomit, whichever came first. Motion sickness incidence (MSI), defined as the percentage of Ss experiencing vomiting, was greatest at a frequency of 10 CPM (.167 Hz). For all wave frequencies, MSI increased as a monotonic function of the acceleration level. A mathematical model was derived from the data, and the implications for underlying physiological mechanisms and for transportation vehicle design were discussed. Author (GRA)

N74-14837# Naval Air Development Center, Warminster, Pa. Crew Systems Dept.

DETECTION OF SHORT DURATION LIGHT SIGNALS PRESENTED IN THE PERIPHERY Progress Report

Robert M. Herrick 22 May 1973 26 p refs (AD-767320; NADC-73115-40) Avail: NTIS CSCL 06/16

While viewing the terrain or some visual display device, naval personnel must attend to signals presented in the periphery. Whether such signals are detected depends upon the luminance of the signals, the duration of the signals, the interval of time

separating successive signals, and the number of signals presented. These four visual variables were examined, in psychophysical experiments, and simple empirical laws were derived to describe the relations among the variables. (Modified author abstract)

N74-14838# Naval Air Development Center, Warminster, Pa. Crew Systems Dept.

ANALYSIS OF HEAD IMPACT Interim Report Stephen L. Gordon 1 May 1974 136 p refs (AD-767319; NADC-73065-40) Avail: NTIS CSCL 06/19

A finite difference form of the governing equations of motion for one and two-dimensional wave propagation is utilized to solve the problem of non-penetrating impact to the human head. The layered plate one-dimensional analysis provides a method of predicting the influence of several material property and size modifications in a geometrically simplified head impact model. The spherical model with a layered energy absorbing skull yields highly attenuated and smoothed tensile pressure peaks in the brain as compared to the results with a single layered elastic skull. An elastic brain model (that includes an assumed high dynamic shear modulus) suggests that the combined shear-normal stress levels would be more likely to cause failure than the shear free stress condition in a hydrodynamic brain model. The generality of the solution techniques would readily permit extension of the analyses to investigate the significance of future modelling considerations. Author (GRA)

N74-14839# Naval Air Development Center, Warminster, Pa. Crew Systems Dent.

OPTICAL EFFECTS OF PIGMENTATION OF TEMPERATURE RISE IN A TWO-LAYER SKIN SIMULANT SYSTEM DURING **IRRADIATION Interim Report** 

John R. Piergallini and Alice M. Stoll 31 Oct. 1972 51 p. refs (A2)-767649; NADC-72225-CS) Avail: NTIS CSCL 06/16

it is demonstrated that from a knowledge of the thermal and optical properties of each layer of a two-layer system, together with the amplitude and distribution of the energy input, it is possible to predict temperature rises at depth in the second layer of a two-layer system. By varying the optical properties of the first layer and observing the temperature rises at depth in the second layer, the experimental results can be used to verify mathematical expressions for optical and heat transfer processes of the two layers. Such a system was devised to determine the thermal conductivity between a silicone rubber patch and the living skin irradiated. It may also be used in evaluations of other two-layer systems where reflectance, transmittance and heat transfer properties are known and must be accounted for in the mathematical model. Author (GRA)

N74-14840# Naval Air Development Center, Warminster, Pa. Crew Systems Dept.

FREQUENCY THRESHOLD FOR TWO FLASH FLICKER AND CRITICAL FLICKER: WHY THEY DIFFER Progress Report Robert M. Herrick 8 Jun. 1973 22 p refs

(AD-767322; NADC-73131-40) Avail: NTIS CSCL 06/16

The minimum interval detectable between two successive light flashes is longer than the minimum interval detectable when many flashes are viewed. The probability summation hypothesis is suggested to explain the difference. For a giren flash duration, the minimum interval detectable decreases as a function of the number of flashes n, until n equals about 8 or 10; further increases in n cause no further changes in this interval. Of the total decrease in the interval from 2 to 99 flashes, about 90% is explained by the probability summation hypothesis. Author (GRA)

N74-14841# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

PREDICTION OF NIPTS DUE TO CONTINUOUS NOISE EXPOSURE

Daniel L. Johnson Jul. 1973 68 p refs Prepared in cooperation with EPA

(AF Proj. 7231)

{AD-767205; AMRL-TR-73-91; EPA-550/9-73-001-B} Avail: NTIS CSCL 06/19

The report compares the relationship of noise exposure to noise induced permanent threshold shift (NIPTS) as predicted by the currently available works of Passchier-Vermeer, Robinson, Baughn and Kryter, and the yet unpublished work of the National Institute of Occupational Safety and Health. The works of Passchier-Vermeer, Robinson, and Baughn are selected since these are the only works that completely predict the relationship between NIPTS and noise exposure for various audiometric frequencies. sound pressure levels and population percentiles. The predictions of these three methodologies are averaged in order to provide one single relationship between continuous noise exposure and This relationship is presented in various ways so that the effect of noise exposure on hearing can be viewed in more then one way. Discussion concerning the type of frequency weighting, the equal energy rule, and long duration exposures is also provided. (Modified author abstract)

N74-14842# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

#### FREE 17-OHCS LEVELS IN PAROTID FLUID AS INDICA-TORS OF HYPERTHERMIC STRESS

Marion T. Ulrich and Abbott T. Kissen May 1973 13 p refs Presented at the Aerospace Med. Assoc., Bel Harbour, Fla., May 1972

(AF Proj. 7222)

(AD-767207; AMRL-TR-73-3) Avail: NTIS CSCL 06/1

Physiologic parameters of rectal, skin, and body temperatures, body heat storage, heart rate, and parotid fluid 17-OHCS levels were obtained on human subjects during one hour hyperthermic exposures at 52C and 66C ambient air temperatures. Significant differences were noted between control and exposure values in all parameters (except parotid fluid 17-OHCS) where elevated responses correlated with duration and degree of thermal stress, reaching maximal values after 50 and 60 minutes of exposure. In the 17-OHCS response, fluctuations were observed for both the 66C and 52C exposures with primary peak elevations for each occurring at 20 minutes exposure and secondary peak elevations at 50 and 60 minutes, respectively. The parotid fluid conticosteroid level, with its shifting between normal and elevated values, is an unpredictable barometer of physiologic strain induced by heat stress. Author (GRA)

N74-14843 British Library Lending Div., Boston Spa (Eng-

#### HAZARDS OF MICROWAVE RADIATION AND PROPOSALS FOR SCREENING RADAR TECHNICIANS

M. Phlak, V. Servus, and J. Schubertova 5 Jul. 1973 10 p refs Transl. into ENGLISH from Vojenske Zdravot. Listy (Prague). v. 38, ло. 1, 1969 р 7-9

(BLL-OA-Trans-1270-(6196.3)) Avail: British Library, Lending Div., Boston Spa, Engl.: 1 BLL photocopy coupon

An attempt was made to obtain information on the effects of microwave radiation on the body by screening radar technicians. Screening results show: (1) no organic damage could be detected by existing methods, and (2) subjective neurasthenic disorders found in technicians did not differ significantly from the control group. Author

N74-14844 British Library Lending Div., Boston Spa (Eng-(and)

MODES OF CONTROL IN MANUAL CONTROL SYSTEMS Hiroshi Tamura [1973] 19 p refs Transl into ENGLISH from Keisoku Jidoseigyo Gakkai Ronbunshu (Japan), v. 8, no. 4, 1972 p 414-421 Presented at the 14th Meeting of the Autom. Control Federation, Nov. 1971

(BLL-RTS-7834) Avail: British Library Lending Div., Boston Spa. Engl.: £ 1.80 or 6 BLL photocopy coupons

A study was made of the adaptivity and learning function of a man in manual control systems. As an index of learning function, a numerical comparison of control results and changes in control mode were studied. Transfer functions, nonlinearity, and unsteadiness of human control actions were included. It was concluded that control mode changes are related to the experience and skill of subjects. Author

N74-14845\* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

### MODIFICATION OF ONE MAN LIFE RAFT Patent

Ernest J. Soter, inventor (to NASA) Issued 1 Jan. 1974 4 p. Filed 29 Oct. 1971 Supersedes N72-21076 (10 - 12, p 1563) (NASA-Case-LAR-10241-1; US-Patent-3,781,933;

US-Patent-Appl-SN-193672; US-Patent-Class-9-11A) Avail: US Patent Office CSCL 06K

A one man inflatable life raft is described. The raft has an inflatable tube perimetrically bounding the occupant receiving space with a flexible floor member. A zippered opening in the floor allows entry and facilitates the use of a constant diameter tube. An airtight fabric bulkhead divides the peripheral tube longitudinally into inflatable tube sections, where if either tube section were punctured, the bulkhead would move into the punctured section to substitute for the punctured wall portion and maintain the inflatable volume of the tube. The floor member is attached to the central portion of the tube wall so that either side of the raft can be the up side.

Official Gazette of the U.S. Patent Office

N74-14846\*# Illinois Univ., Urbana. Dept. of Mechanical and Industrial Engineering.

PHYSIOLOGICAL AND ENGINEERING STUDY OF AD-VANCED THERMOREGULATORY SYSTEMS FOR EXTRA-VEHICULAR SPACE SUITS Final Report

J. C. Chato and B. A. Hertig Aug. 1972 495 p refs (Grant NGR-14-005-103)

(NASA-CR-130811; ME-FR-400) Avail: NTIS HC \$26.25 CSCL 06K

Investigations of thermal control for extravehicular space suits are reported. The characteristics of independent cooling of temperature and removal of excess heat from separate regions of the body, and the applications of heat pipes in protective suits are discussed along with modeling of the human thermal system. F.O.S.

N74-14847\*# Northrop Corp., Beverly Hills, Calif. Electronics

#### SKYLAB S071/S072 CIRCADIAN PERIODICITY EXPERI-MENT Final Report

M. K. Fairchild and R. A. Hartmann Nov. 1973 99 p (Contract NAS2-6897)

(NASA-CR-114706; Nort-73-320) Avail: NTIS HC\$7.00 CSCL 06B

The circadian rhythm hardware activities from 1965 through 1973 are considered. A brief history of the programs leading to the development of the combined Skylab S071/S072 Circadian Periodicity Experiment (CPE) is given. SO71 is the Skylab experiment number designating the pocket mouse circadian experiment, and SO72 designates the vinegar gnat circadian experiment. Final design modifications and checkout of the CPE, integration testing with the Apollo service module CSM 117 and the launch preparation and support tasks at Kennedy Space Center are reported. Author

N74-14848# Oak Ridge National Lab., Tenn. Thermonuclear

#### SAFETY WITH HIGH MAGNETIC FIELD SYSTEMS

J. N. Luton, Jr. Sep. 1973 28 p refs Presented at the Southern Area Res. and Develop. Symp. Submitted for oublication.

(Contract W-7405-eng-26)

(ORNL-TM-4313) Avail: NTIS HC \$3.50

Based on a consideration of the laboratory environment and on the physical characteristics of high field magnet coils and of humans, some hazards and safety precautions concerning steady state magnet systems are discussed. Author (NSA)

N74-14849# Calspan Corp., Buffalo, N.Y. AN EVALUATION OF THE DYNAMIC PERFORMANCE CHARACTERISTICS OF ANTHROPOMORPHIC TEST DEVICES, VOLUME 3 Final Report, Jun. 1971 - Nov. 1972 James B. Walunas and J. Sam Miller May 1973 97 p refs (Contract DOT-HS-053-1-129)

(PB-223106/6; CALSPAN-FA-5018-V-3-Vol-3; DOT-HS-800-863-Vol-3) Avail: NTIS HC \$3.76 CSCL 13F The dynamic performance of a state-of-the-art 95th percentile anthropomorphic dummy was determined under conditions approximating those expected in vehicle compliance testing.

N74-14850# Hughes Aircraft Co., Culver City, Calif. ECONOMICAL MULTIFACTOR DESIGNS FOR HUMAN FACTORS ENGINEERING EXPERIMENTS

Charles W. Simon Jun. 1973 191 p refs (Contract F44620-72-C-0086; AF Proj. 9778) (AD-767739; HAC-P73-326; AFOSR-73-1702TR) Aveil: NTIS CSCL 05/5

Experimental data collection plans are described that permit the study of from five to thirty experimental human factors. The reported plans were selected from those employed in physical science research and were suitable for human factors engineering research. The method of employing these designs is two phase. In the first phase, a large number of potentially critical factors are systematically screened in a way that identifies the more important ones. In the second, functions are obtained that relate the more important quantitative factors to operate performance. Five principles that enable economical miltifactor human factors experiments to be successfully conducted are stated. (Modified author abstract)

N74-14851# School of Aerospace Medicine, Brooks AFB, Tex. X-RAY FLUOROMETER AND SOLID STATE DETECTOR CALIBRATION FOR BIOLOGIC SPECIMEN ANALYSIS Final Report, Jun. - Dec. 1972

Ted D. Rupp and John L. Montet Aug. 1973 43 p refs

(AF Proj. 7757)

(AD-767585; SAM-TR-73-17) Avail: NTIS CSCL 06/18

Due to the recent demand for data concerning radiofrequency (RF) hazards to man, extensive information is now needed on the normal metabolites of experimental animals exposed to various RF fields. The metal content of blood plasma is known to respond to various thermal environments. This response is thought to be the primary means by which RF fields affect most biologic systems. X-ray fluorescence has recently been shown to be a feasible technique, by means of using lithium-drifted silicon or germanium solid-state detectors, for the simultaneous determination of several metals in biologic samples. This report describes the source arrangement and calibration of such a fluorometer, as well as the calibration of the solid-state detectors in the 3.5 Key to 3.5 Mey energy region. Also included is the application of the completed apparatus to X-ray fluorescence analysis of GRA biologic systems. (Modified author abstract)

N74-14852# McDonnell-Douglas Astronautics Co., St. Louis, Mo. Engineering Psychology Dept. PREDICTING MAINTENANCE TASK DIFFICULTY AND PERSONNEL SKILL REQUIREMENTS BASED ON DESIGN PARAMETERS OF AVIONICS SUBSYSTEMS Larry M. Lintz, Susan L. Loy, Gerald R. Brock, and Kenneth W.

Potemps Aug. 1973 135 p refs (Contract F33615-71-C-1620; AF Proj. 1124)

(AD-768415; AFHRL-TR-72-75) Avail: NTIS CSCL 05/9

The relationships among subsystem design characteristics, personnel skill characteristics, and job performance were investigated for avionics subsystems. A list of design characteristics was established, and functional loops and line replaceable units were selected from ten subsystems representing navigation, flight control, communications, and fire control subsystems. Experienced supervisors identified high and low skill maintenance personnel. These supervisors associated performance times and error probabilities for three maintenance tasks - an easy task, a difficult task, and a complete functional checkout task. Supervisors also rated each task on a scale of difficulty.

### Subject Index

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Suppl. 127)

**APRIL 1974** 

Typical Subject Index Listing	TITLE EXTENSION
SUBJECT HEADING	L
Investigation of manual control flight tracking tasks and by pilots	in secondary target acquisition
AD-766070	<u>1874-10</u> 108
TITLE REPORT NUMBER	ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three bunkers. The NASA or AIAA accessing number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

#### ABIOGRAPHISTS

Iron-sulphur proteins - Their possible place in the origin of life and the development of early metabolic systems

Photobiological processes and criteria of existence of living systems

N74-14796

Biomagnetism: A appotated bibliography FNASA-CR-1366161 N74-14793 ACCELERATION (PHYSICS)

The gravity reference response, the rotation sensation, and other illusory sensations experienced in aircraft and space flight

#### ACCELERATION STRESSES (PHYSIOLOGY)

Osefulness of hematological and biochemical variables for the differentiation of impact acceleration effects

A useful test in selecting motion-sick-prone individuals

N74-14822

Space Biology and Medicine, volume 7, no, --- human tolerances to space flight stress [JPRS-61020] N74-14798 Ways to increase the noise immunity of a system

for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811

Motion sickness incidence as a function of the frequency and acceleration of vertical sinusoidal motion [AD-768215] N74-14836

ACCELERATION TOLERANCE

Influence of ethanol on cardiovascular tolerance

to +Gz acceleration

A74-19081 Methods for study of cardiovascular adaptation of

small laboratory animals during exposure to altered gravity --- hypothermia for cardiovascular control and cancer therapy

ACRIVL COMPOUNDS

The efferent innervation of the vestibular receptors [NASA-TT-F-15231] N74-14830

ACTIVITY (BIOLOGY)

Some problems involving detailed diachronic investigation of processes in the psychic and social life of man

Characterization of a perturbed geomagnetic field ac a ctimulant

174-16816

Problems of space biology Volume 19: Problems of the resistance of biological systems FNASA-TT-P-7611 N711-13770

Kinetic principles of interaction of components in complex biological systems --- for spacecraft life support equipment

N74-1378つ

Problems of space biology. Volume 19: Problems of the resistance of biological systems [NASA-TT-F-761] . N74-13779

The limits of the adaptation of life to extreme conditions (in connection with problems of exobiology)

N74-13784

ADENOSINE TRIPHOSPHATE (ATP)

Carbon metabolism enzymes and ATP in eyes with

disrupted innervation

A74-16739

ADRENAL GLAND

Effect of previous exposure to a steady magnetic field on the histochemical characteristics of the functional state of the adrenal cortex in X-rayed animals

A74-19075

ADREBAL METABOLISM

The effect of bedrest on adrenal function

A74-17960 Effects of exercise on adrenocortical function 174-1857£

ADSORPTION

Possible adsorption analog systems for modeling the processes in a living organism

The limits of the adaptation of life to extreme conditions (in connection with problems of exobiology)

ARROSPACE MEDICINE Pathophysiological conditions compatible with flying [AGARD-CP-129] N74-13784

Space Biology and Medicine, volume 7, no 6. 1973 --- human tolerances to space flight stress R75-18705

AEROSPACE SCIENCES Medical progress from aerospace research --- NASA

Biomedical Application Team Program
[AIAA PAPER 74-276]
AFFERENT BERYOUS SISTEMS A74-18678

Mechanism of CO2-sensitivity variations in the

respiration center A74-16642

Efferent innervation of the vestibule

N74-13778

[ NA SA-TT-P-15232] AFTERIMAGES

Stereoscopic aftereffects - Evidence for disparity-specific neurones in the human visual

374-184F7 Spatial frequency phase effects in human vision A78-18819

Perception of structure in flashes and in afterimages

AGE FACTOR SUBJECT INDEX

Visual information obtained from flashes afterimages	and from	End-tidal oxygen analysis using a sync pulse generator	
,	A74-18415	AHING ACIDS	A74-18573
AGE FACTOR Relationships between age, ATC experienc	e, and job	Forearm amino acid metabolism during c physical inactivity	hronic
ratings of terminal area traffic contr	<u> 174-19046</u>	ANAEROBES	A74-19040
The thousand aviators: Aging and the bl active flying status after age 60	N74-13786	Ferredoxins in the evolution of photos systems from anaerobic bacteria to h	
Elevated blood pressure in aircrew	¥74-13787	ANALOG SIMULATION	
Management of qlaucoma in an ageing flyi population		Possible adsorption analog systems for the processes in a living organism	
Pure tone hearing losses in pilots of va	N74-13799 rious	ANGIOGRAPHY	A74-18594
aircraft, age and flying time and its significance for inflight speech commu		Use of bicycle ergometry and sustained exercise in the diagnosis of present of coronary heart disease	e and extent
Proteinurias in flying personnel  The problem of diabetes mellitus in avia	N74-13802	Quantitative videoanglocardiography, a neasuring the heart's pumping functi	
medicine control of hypoglycemic r in flying personnel	eactions	Determination of left ventricular size	A74-17879 e and shape
	N74-13804	Angioarchitectonics of the cerebellum	A74-18451
Respiration of poikilothermic animals in	ı a.	of man	A74-19190
helium-oxyden atmosphere	1974-14798	Returning airmen with abnormal exercise normal coronary angiograms to flying	se tests and
AIR POLLUTION Studies of smoke damage to trees 1: A	cute SO2		N74-13788
damage symptoms [TR-389-73]	N74-13770	ANTIADRENERGICS Adrenergic beta-receptor blockade and	metabolic
AIR TRAFFIC CONTROL Relationships between age, ATC experience	e, and job	response to centrifugation stress	A74-18558
ratings of terminal area traffic contr	Ollers A74-19046	APOLLO PROJECT  Certain results of the medico-biologic	cal
AIRCRAFT ACCIDENT INVESTIGATION  Myocardial infarction - An in-flight pro		investigation conducted in the Gemin programs: Change in weight and indi	ices of the
fatal aircraft accident investigation		cardiowascular system in astronauts [NASA-TT-P-15261]	N74-14832
AIRCRAPT ACCIDENTS  Behavioral stress response related to pa briefings and emergency warning system /Commercial airlines/	ussender us	Some results of biomedical investigat: conducted during the Gemini and Apol (alterations in blood and skeletal a mineral and electrolyte metabolism	llo programs apparatus,
Electroencephalogram and aerospace safet	A74-17882	astronauts) [NASA-TT-F+15270]	N74-14834
implications with respect to physical for candidate flyers		ARM (ANATOMY)  A new catheter technique for His bund	le recordings
German Air Force experiences with certai	A74-19050 in criteria	via the arm veins	A74-17008
for granting a waiver	N74-13806	Study of the effect of machine and in- vibrations on the arms of a human or variable initial loads	
AIRCHAPT LANDING Effect of a predictor display on carrier	landing	ASTENA	A74-17228
performance Part 1: Experimental et [AD-767982] AIRCRAPT PILOTS	N74-13822	Asthma in military flying personnel	N74-13792
Myocardial infarction - An in-flight pro- fatal aircraft accident investigation	oblem for USAF A74-19049	ASTROBART LOCOMOTION  Analysis of the astronaut's activity in free space	when working
The thousand aviators: Aging and the b	lood pressure	ASTRONAUT PERFORMANCE	A74-16666
Pure tone hearing losses in pilots of Vo	N74-13786	Analysis of the astronaut's activity in free space	when working
aircraft, age and flying time and its significance for inflight speech comm		ASTRONAUTS	A74-16666
ALANINE  Forearm amino acid metabolism during ch	N74-13801	Some results of biomedical investigat conducted during the Gemini and Apo (alterations in blood and skeletal	llo programs apparatus,
physical inactivity	A74-19040	mineral and electrolyte metabolism astronauts)	
ALGAR Problems of space biology. Volume 19:		[NASA-TT-F-15270] AUDIOMETRY	N74-14834
of the resistance of biological system [NASA-TT-F-761] Mass-energy metabolic characteristics o	N74-13779	Prediction of NIPTS due to continuous [AD-767205] AUDITORY DEFECTS	N74-14841
for spacecraft life support system	N74-13781	Shock tube application in bio-acousti	o impulse noise
ALTITUDE ACCLIBATIZATION  The influence of long-term intermittent to hypoxia on gastric emptying time i	n rats	Pure tone hearing losses in pilots of aircraft, age and flying time and i	ts
ALVEOLAR AIR	A74-17952	significance for inflight speech co	N74~13801
Alveolar CO2 tension control and the me voluntary respiration control in man		Effect of vestibular tests on orienta to the vertical in healthy and deaf	-mute subjects
	A74-16641	Prediction of NIPTS due to continuous [AD-767205]	N74-14866 noise exposure N74-14841

BIORLECTRIC POTENTIAL

AUDITORY STIMULT		BEHAVIOR	
Retention of time information in forced	-choice	Information processing, a behavioral event	. and
duration discrimination		cortical neurons	D. 47006
	A74-18625		174-17946
AUTONATIC TEST EQUIPMENT		BIBLIOGRAPHIES Biomagnetism: A annotated bibliography	
Automatic analysis and detection of EEG	A74~17500	[NASA-CR-136616]	174-14793
AUTOMOBILE ACCIDENTS	A/4-1/300	BINOCULAR VISION	
An evaluation of the dynamic performance	2	Some dynamic features of depth perception	
characteristics of anthropomorphic tes			174-18411
volume 3		Binocular masking level differences in sig	usoidal
[PB-223106/6]	N74-14849	grating detection	74-18416
AUTONOMIC MERVOUS SYSTEM  The influence of long-term intermittent	exposures	The constancy of object orientation - Comp	
to hypoxia on qastric emptying time i		for ocular rotation	
co mibowid on descrite embelined crme in	A74-17952		174-18627
AUTOTROPES		BIOACOUSTICS	
On evolution of the photosynthetic pigm		Shock tube application in bio-acoustic res	
<b></b>	A74-17963	psychophysiological responses to imp	174-16386
Thermodynamics of thermal radiation from	n stars	BIOASSAY	174-10366
photoautotrophs and biospheres	A74-17965	Retabolism under extremal conditions of a	space
AVIONICS	471 11743	flight and during its simulation Rus	
Predicting maintenance task difficulty	and	Į.	474 <b>-</b> 16775
personnel skill requirements based on		BIOASTRONAUTICS	
parameters of avionics subsystems		Some results of the medico-biological	inil and
[AD-768415]	N74-14852	investigations performed under the 'Gemi 'Apollo' programs II - Changes in blood	
AZOTOBACTER Feasibility of a 'qas exchange' method:	for	characteristics, bone apparatus, and min	
detecting extraterrestrial life by	LOI	electrolytic metabolisms of the astronar	ıts
identification of nitrogen-fixing mic	roorganisms	1	A74-19073
	A74-19072	BIOCHEMISTRY	
		Usefulness of hematological and biochemica	
В		variables for the differentiation of imp	act
		acceleration effects	174-16754
BACK INJURIES  The risk of minor spinal abnormalities:	in	Possible adsorption analog systems for mod	
aircrews: Evaluation of ejection case		the processes in a living organism	·
	N74-13795	·	A74-18594
BACKGROUND NOISE		BIOCONTROL SYSTEMS	
Binocular masking level differences in	sinusoidal	Alveolar CO2 tension control and the mecha	inisms of
grating detection	A74-18416	voluntary respiration control in man	A74-16641
BACTERIA	E/4-10410	A centre for accommodative vergence motor	
Perturbations of the terrestrial electron	omagnetic		A74-18418
field and the problem of heliobiologic		Dynamics of the respiratory controller du	cinq
	<b>A74-16819</b>	carotid body hypoxia	1056h
Lack of bacterial survival under		Influence of fitness on the blood pressure	18564
Cytherean-oriented conditions	A74-17951	system in man	3 COMCTOI
An observation about the relative hardi			A74-19044
bacterial spores and planetary quaran		BIODYNAMICS	
	A74-17956	Analysis of the astronaut's activity when	working
Survival of common bacteria in liquid c		in free space	.70 2000
under carbon dioxide at high temperat		Study of the effect of machine and instru	A74-16666
Analysis of the results of an investiga	A74-18286	vibrations on the arms of a human opera	
biological effect of heavy ions with		variable initial loads	
linear energy losses on the basis of		-	A74-17228
theoretical inactivation model (inter		Construction of a dynamic model for the b	
of experiments with E coli)		human operator exposed to the action of	random
D1 4000000 0.00	N74-14795	wideband wibrations	A74-17229
BACTERIOLOGY Level of spontaneous phage production i	n the	Functional modeling in the biomechanical	
lysogenic system E, coli K12 as a tes	t of solar	of the human operator	
activity			A74-17230
	A74-16818	Technique for an experimental investigati	
BACTERIOPHAGES		dynamic characteristics of a human oper	ator
Level of spontaneous phage production i		under random vibrational loads	A74-17231
lysogenic system E, coli K12 as a tes	t or solar	On the dynamical realization of /M, R/-sy	
activity	A74-16818	abstract cell models application to gen	
BALLISTOCARDIOGRAPHY	274 10010		A74-17846
Measurement of the stroke volume by an	integral	Pressure-flow relationships in the isolat	ed canine
rheogram of the human body		trachea	- 50 40555
[ NA SA-TT-F-15268]	พ74-14833	·	A74-18560
BARORECEPTORS	25	Dynamics of the respiratory controller da	TTUÄ
Role of the cerebellum and the vestibul apparatus in regulation of orthostati	ar c reflexes	carotid body hypoxia	A74-18564
in the cat	~ rettewed	BIGELECTRIC POTENTIAL	
TH CHE SOL	A74-18452	Information processing, a behavioral even	t, and
Cardiopulmonary baroreflexes - Integrat	ed	cortical neurons	
responses to sine- and square-wave fo	rcinq		A74-17946
	A74-18567	Contributions of the primary chromatic me	
BBD REST The effect of bedrest on adrenal functi	Ωħ	to the generation of visual evoked pote	174-18408
The effect of bedrest on addengt iducti	A74-17960	Evoked potentials specific to spatial pat	
		luminance and colour	

SUBJECT INDEX

BIOBLECTRICITY SUBJECT INDEX

*			
Computer reduction and analysis of neurophysiological data with special em eyoked potential frequency analysis	phasis on	Computer reduction and analysis of neurophysiological data with special en evoked potential frequency analysis	phasis on
eAoked boteutial lieddeuch quarkarz	A74-19C12		A74-19012
BIOELBCTRICITY  Effect of local stimulation of pons Varol respiratory neuron activity and respiratory	tion	BIOMETRICS A noninvasive pressure-pulse recorder - Development and rationale	170 4704A
Electrical activity and transmembranar ic current of the myocardial fiber of the	A74-16640 Dic monkey	End-tidal oxygen analysis using a synchropulse generator	
/family of cercopithecidae/	A74-16800	Ways to increase the noise immunity of a for registering the bicelectric potenti	A74-18573 system ials of
An environmental chamber system for prolo metabolic studies on small animals		man under the influence of prolonged ac	
Mathematical evaluation of reliability of		Construction of a dynamic model for the l	ondvofa
functioning of the biological link in a bioengineering system	1	human operator exposed to the action of wideband wibrations	frandom
	N74-14797	Functional modeling in the biomechanical	A74-17229
BIOLOGICAL EFFECTS  Cytogenetic analysis of seeds of diploid	and	of the buman operator	
autotetrapoid forms of Crepis capillari		On the department realigation of /N D/ser	A74-1723C
flight on the artificial earth satellit	e	On the dynamical realization of /N, R/-sy abstract cell models application to get	netics
miece	A74-16667	An integrated human thermal system and it	A74-17846
The effect of certain cosmic and qeophysi factors on the earth's biosphere Ru		unsteady-state simulation	∆74-17869
Some problems involving detailed diachron	nic	Possible adsorption analog systems for mo	odeling
investigation of processes in the psych social life of man	ic and	the processes in a living organism	A74-18594
Heliogeophysical factors of the progress epidemic process	A74-16874 of an	On one method of approximation of process uniform biological structures	ses in 174-18933
	A74-16815	A computer simulation of the otolith mem	brane A74-19010
as a stimulant	A74-16816	Application of the 'Hopscotch' algorithm solving the heat flow equation for the	for
Reactions to magnetic fields in the organ			A74-19011
animals and man	A74-16817	BIOSYNTHESIS Iron-sulphur proteins ~ Their possible pi	laga in
Perturbations of the terrestrial electron field and the problem of heliobiological	nagnetic	the origin of life and the development metabolic systems	
Filamentous funci exposed to spaceflight	A74-16819	Origin of life	A74-17954
including known levels of ultraviolet i	irradiations	Nathamatical evaluation of weliability of	A74-18193
Magnestism in biology	A74-17959 N74-13771	Mathematical evaluation of reliability of functioning of the biological link in bioengineering system	
The limits of the adaptation of life to	extreme		N74-14797
conditions (in connection with problems exobiology)		BIOTECHNOLOGY Artificial lung - A breakthrough confirm	ed A74-1B196
The effect of dehydration and hypertherm	N74-13780 ia on the	BIOTELEMETRY	
homeostasis of the healthy man [NASA-TT-F-1525C]	N74-13783	Implantable telemetry systems for use in monitoring	animal
Problems of space biology, Volume 22: !			A74-17868
under the extreme conditions of spacefl during its simulation	light and	Measuring body temperature by telemetry removable probe in an implanted cannul.	
(NASA-TT-F-151631 Biomagnetism: A annotated bibliography	N74-13813	BLOOD	A74-18574
[NASA-CR-136616]	N74-14793	Accurate determination of 02 dissociation	n curve of
Water and saline balances during prolonge immersion in a water bath		human blood above 98.7% saturation wit: 02 solubility in unmodified human bloom	
[NASA-TT-F-15229] BIOLOGICAL EVOLUTION	N74-14829	to 37 C	A74-18566
On evolution of the photosynthetic pigmen	nts A74-17963	Some results of the medico-biological investigations performed under the 'Ge	nini! and
Perredoxins in the evolution of photosyn	thetic	'Apollo' programs, II - Changes in blo	ođ
systems from anaerobic bacteria to high	her plants A74-17964	characteristics, bone apparatus, and me electrolytic metabolisms of the astron	
Cytochrome c and evolution of the energy			A74-19073
s <b>y</b> st <b>on</b>	A74-17966	BLOOD CIRCULATION  Effective compliance of the total vascul	ar bed and
Origin of life	A74-18193	the intrathoracic compartment derived changes in central venous pressure ind	from
Interplanetary belt of life for exist qenesis of live systems around sun		Volume changes in man	A74-18453
	A74-18304	Myocardial and cerebral function during	exposure
Numerical computer data on functional co		to carbon monoxide effects of hypo pilot performance	
and phase shifts in the tension rhythm cortical and hypothalamic zones during		Fluid flow in the lung: A survey. Nume	N74-13789 rical
formation of a pain stress		solution for gas mixing in a simple mo	del of the
	A74-18595	lung, and experimental study of flow i walled collapsible tube	n a thin
		[AD-767638]	N74-13814

CARBON DIOXIDE SUBJECT INDEX

BLOOD COASULATION  Dissolution of blood clots, possibilities	s and	Resting metabolism and thermorequiation is unrestrained rabbit	in the A74-18569
	A74-18175	Effects of exercise on adrenocortical fu	
BLOOD FLOW  Electrical conductivity variations in a b  stream boving at variable rates		Measuring body temperature by telemetry or removable probe in an implanted cannula	using a
Pulmonary capillary blood flow during non spontaneous breathing in man		Application of the 'Ropscotch' algorithm solving the heat flow equation for the	for
Warrange of the stacks golden by an in	A74-18562	BODY WEIGHT	E/4 /3011
Heasurement of the stroke volume by an in Theogram of the human body [NASA-TT-P-15268] BLOOD PLASMA	N74-14833	Certain results of the medico-biological investigation conducted in the Gemini programs: Change in weight and indices	and Apollo s of the
Dissolution of blood clots, possibilities problems		cardiovascular system in astronauts [NASA-TT-F-15261]	N74-14832
Changes in blood and plasma volumes in decompression sickness	a74-19045	BONES Some results of the medico-biological investigations performed under the 'Ge' 'Apollo' programs, II - Changes in blo- characteristics, bone apparatus, and m	o <b>đ</b> .
The effect of physical electise on bindin corticosteroids by transcortin in plass [NASA-TT-F-15258] BLOOD PRESSURE		electrolytic metabolisms of the astron	auts 
A noninvasive pressure-pulse recorder - Development and rationale		<pre>innersion conditions (roentgenophotone investigation)</pre>	tric
'	A74-17910		r74-14810
Effective compliance of the total vascula the intrathoracic compartment derived to	from	Effect of local stimulation of pons Varo	lii on
changes in central venous pressure induvolume changes in man		respiratory neuron activity and respir Cross-correlation analysis of the tensio	A74-16640
Inert das washout in rats - Enhancement I fluorocarbon infusion		in various cerebral formations during formation of a functional system of de	the
Influence of ethanol on cardiovascular to to +Gz acceleration		Myocardial and cerebral function during to carbon monoxide effects of hypo	exposure
Influence of fitness on the blood pressu	A74-19041 re control	pilot performance	M74-13789
system in Man	A74-19044	BRAIN CIRCULATION Influence of smoking and nicotine on cer	ebral
The thousand aviators: Aging and the bl active flying status after age 60		blood flow and netabolic rate of oxyge Angioarchitectonics of the cerebellum co	n in man A74-18561
Elevated blood pressure in aircrew	N74-13787	of man	A74-19190
BLOOD VESSELS Mixed venous-arterial difference of mole		BRIGHTNESS DISCRIMINATION Brightness selectivity in the motion aft	ereffect A74-18630
nitrogen in man	A74-18557		
BLOOD WOLUME Effective compliance of the total wascul	ar bed and	C	
the intrathoracic compartment derived changes in central venous pressure ind volume changes in man	from	CABIN ATMOSPHERES Metabolic effects of artificial environm	ents N74-14817
	A74-18453	CALCIPICATION	
Changes in blood and plasma volumes in d decompression sickness	logs during A74-19045	Mineralization of human bone tissue under immersion conditions (roentgenophotome investigation)	tric
BLUE GREEN ALGAE	-	ar name	N74-14810
Separation of small circular DNA molecul the blue-green alga Anacystis nidulans	ì	CANCER  Methods for study of cardiovascular adar  small laboratory animals during exposu	tation of
BODY PLUIDS	A74-17907	altered gravity hypothermia for cardiovascular control and cancer ther	^
Mixed venous-arterial difference of mole nitrogen in man	A74-18557	CAPILLARIES (ANATOMY)	N74-14822
Pree 17-OHCS levels in parotid fluid as of hyperthermic stress		Pulmonary capillary blood flow during no spontaneous breathing in man	ormal
[AD-767207] X-ray fluorometer and solid state detect	N74-14842	CAPILLARY FLOW	A74-18562
calibration for biologic specimen anal [AD-767585] RODY KINEMATICS	Lysis N74-14851	Pluid flow in the lung: A survey, Nume solution for gas mixing in a simple mo lung, and experimental study of flow i	odel of the
Analysis of the astronaut's activity whe in free space		walled collapsible tube (AD-767638)  CARROUNDED WEREPOLISE	N74-13814
BODY MEASUREMENT (BIOLOGY) Determination of left ventricular size a	A74-16666	CARBOHYDRATE METABOLISM  Carbon metabolism enzymes and ATP in eyo  disrupted innerwation	
RODY TEMPERATURE Specific role of wrists in thermoregulat	A74-18451	Adremergic beta-receptor blockade and me response to centrifugation stress	
predicting effects of heat acclimatizati	A74-16645	CARBON DIOXIDE	∆74-18558
Predicting effects of neat acclimatization heart rate and rectal temperature	174-18568	Lack of bacterial survival under Cytherean-oriented conditions	170-17051

A74-17951

CARBON DIOXIDE TENSION SUBJECT INDEX

Survival of common bacteria is liquid culture under carbon dioxide at high temperatures A74-18286	Analysis of the results of an investigation of the biological effect of heavy ions with different linear energy losses on the basis of a
CARBON DIOXIDE TENSION	theoretical inactivation model (interpretation
Alveolar CO2 tension control and the mechanisms of voluntary respiration control in man	of experiments with E. coli) N74-14795
\$74-16641	CENTEAL MERVOUS SYSTEM
Mechanism of CO2-sensitivity variations in the	Electroencephalogram and aerospace safety
respiration center A74-16642	implications with respect to physical standards for candidate flyers
Dynamic respiratory response to abrupt change of	A74-19050
inspired CO2 at normal and high oxygen pressure a74-18571	Hiberanation, sleep, and thermoregulation H74-14818
End-tidal oxygen analysis using a synchronous	CENTRIFUGING
pulse generator	Separation of small circular DNA molecules from
174-18573 CARBON MONOXIDE POISONING	the blue-green alga Anacystis midulans A74-17907
Measurement errors of CO analyzers and their	CENTRIPOGING STRESS
influence on the evaluation of the effect of CO in humans	Adrenergic beta-receptor blockade and metabolic response to centrifugation stress
A74-16851	A74-18558
Myocardial and cerebral function during exposure	CEREBELION
to carbon monoxide effects of hypoxia on pilot performance	Role of the cerebellum and the vestibular apparatus in regulation of orthostatic reflexes
N74-13789	in the cat
CARDIAC VENTRICLES Systolic and diastolic time intervals in pulsus	A74~18452 Angioarchitectonics of the cerebellum cortex veins
alternans - Significance of alternating	of man
isovolumic relaxation	A74-19190
A74-17302 Determination of left ventricular size and shape	Bole of cerebellum in vestibular-cardiac reactions during motion sickness in lower monkeys
A74-18451	N74-14812
CARDIOGRAPHY Quantitative videoangiocardiography, a method for	CEREBRAL CORTEX Information processing, a behavioral event, and
neasuring the heart's pumping function	cortical neurons
174-17879	A74-17946
Value of cardiac mechanograms in evaluating flying personnel	Colour-specificity and monocularity in the visual cortex
N74-13791	A74-18425
Reference apparatus for medical ultrasonic transducer	Influence of smoking and nicotine on cerebral blood flow and metabolic rate of oxygen in man
[ NASA-CASE-ARC-10753-1 ] N74-13818	A74-18561
CARDIOVASCULAR SYSTEM Implantable telemetry systems for use in animal	Numerical computer data on functional connections and phase shifts in the tension rhythm of the
monitoring	cortical and hypothalamic zones during the
A74-17868 Effective compliance of the total vascular bed and	formation of a pain stress A74-18595
the intrathoracic compartment derived from	CERTIFICATION
changes in central venous pressure induced by volume changes in man	German Air Force experiences with certain criteria
A74-18453	for granting a waiver N74-13806
Cardiopulmonary baroreflexes - Integrated	CHENICAL BRACTIONS
responses to sine- and square-wave forcing A74-18567	Origin of life A74-18193
Sensitization to metabolic and cardiovascular	CHEBORECEPTORS
effects of catecholamines [NASA-TT-F-15220] N74-13774	Mechanism of CO2-sensitivity variations in the respiration center
Certain results of the medico-biological	A74-16642
investigation conducted in the Gemini and Apollo programs: Change in weight and indices of the	Dynamic respiratory response to abrupt change of
cardiovascular system in astronauts	inspired CO2 at normal and high oxygen pressure A74-18571
f NASA-TT-F-152611 N74-14832	CHEMOTHERAPY
CAROTID SINGS REFLEX Dynamics of the respiratory controller during	Management of glaucoma in an ageing flying population
carotid body hypoxia	N74-13799
CATALITIC ACTIVITY	The problem of diabetes mellitus in aviation medicine control of hypoglycemic reactions
Possible adsorption analog systems for modeling	in flying personnel
the processes in a living organism A74-18594	N74-13804 Qualitative identification of oral effective
CATECHOLANINE	antidiabetica in blood serum of humans for
Sensitization to metabolic and cardiovascular effects of catecholamines	medical evaluation of flight fitness in latent
(NASA-TT-F-15220) N74-13774	diabetic flying personnel [DLE-FB-73-88] N74-14835
CATHETERIZATION	CHOLINERGICS
A new catheter technique for His bundle recordings via the arm veins	Effects of cholinergic innervation on the mammalian heart - The cardiomodulator tonus
A74-17008	A74-16797
CBLLS (BIOLOGY) Superiority of the discriminatory power of sitral	CHOLINESTERASE Influence of transverse accelerations on the
cells compared to that of olfactory receivers	activity of human serum cholinesterase
A74-16798	N74-14805
On the dynamical realization of /M, R/-systems abstract cell models application to genetics	CHROMOSOMES  Cytogenetic analysis of seeds of diploid and
A74-17846	autotetrapoid forms of Crepis capillaris after
Optical function of human peripheral comes	
17h-19h01	flight on the artificial earth satellite
A74-18401  Blectrophoresis in space at zero gravity  [AIAA PAPER 74-210]  A74-18854	flight on the artificial earth satellite 'Kosmos-368,' 174-16667

SUBJECT INDEX COUNTERS

Cytogenetic investigations of blood leukocytes carried out with crew members of the Soyuz space ships cytogenic studies on Soyuz cosmonauts	COMPUTER TECHNIQUES Automatic analysis and detection of EEG spikes A74-17500
N74-14801 CIRCADIAN RHYTHMS Diurnal activity rhythm of sweat glands and thermal adaptation	Computer reduction and analysis of neurophysiological data with special emphasis on evoked potential frequency analysis  A74-19012
A74-16646 Skylab S071/S072 circadian periodicity experiment experimental design and checkout of hardware	Digital computer analysis of circulatory and respiratory pressures in water-immersed dogs breathing liquid in force environments of 1 and
[NASA-CR-114706] N74-14847 CIRCULATORY SISTEM Digital computer analysis of circulatory and	7 Gy A74-19038 COMPUTERIZED SINULATION
respiratory pressures in water-immersed dogs breathing liquid in force environments of 1 and 7 Gy	An integrated human thermal system and its unsteady-state simulation A74-17869
A74-19038 CLINICAL MEDICINE	A computer simulation of the otolith membrane
Medicine and technology application advances since 1934	Application of the 'Hopscotch' algorithm for solving the heat flow equation for the human body
A74-16853 Clinical aspects of drug-induced diseases of the liver	A74-19011 Mass-energy metabolic characteristics of algae for spacecraft life support system
[ NASA-TT-F-15235 ] N74-13772	N74-13781 COMDITIONING (LEARNING)
The effect of physical exercise on binding of corticosteroids by transcortin in plasma   NASA-TT-F-15258   NASA-TT-F-F-15258   NASA-TT-F-F-F-15258   NASA-TT-F-F-F-F-F-F-F-F-F-F-F-F-F-F-F-F-F-F	Role of biogenous anines in memory mechanisms A74-16740
Gertain results of the medico-biological investigation conducted in the Gemini and Apollo	Information processing, a behavioral event, and cortical neurons
programs: Change in weight and indices of the cardiovascular system in astronauts [MASA-TT-F-15261] N74-14832	Psychophysiology: Relationships in rats between speed of learning and duration of paradoxical
Some results of biomedical investigations conducted during the Gemini and Apollo programs	sleep during the myothemeric cycle [NASA-TT-P-15222] N74-13775
(alterations in blood and skeletal apparatus, mineral and electrolyte metabolism in the	Deficiency in retention of conditioning after deprivation of paradoxical sleep in rats [NASA-TT-F-15223]
astronauts) (NASA-TT-F-15270) CLOSED ECOLOGICAL SYSTEMS	Effect of acquisition level on increased paradoxical sleep duration due to avoidance
Problems of space biology, Volume 20, Mathematical models of biological systems	conditioning in the rat [NASA-TT-F-15221] N74-13812
[NASA-TT-F-780] N74-14823	CONFERENCES Pathophysiological conditions compatible with flying
Current aspects of cochlear function applied to flying personnel N74-13800	<pre>fAGARD-CP-129]</pre>
COGNITION  The effects of stimulus structure and familiarity	CORIOLIS BPFECT A useful test in selecting motion-sick-prone
on same-different comparison reaction time in visual tasks	individuals A74-17958
COLOR VISION	Change in the external respiration function during motion sickness human tolerance to Coriolis
Optical function of human peripheral comes A74-18401	accelerations N74-14804
Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system	COROMARY CIRCULATION Use of bicycle ergometry and sustained handqrip exercise in the diagnosis of presence and extent
Chromatic rod activity at mesopic intensities	of coronary heart disease
A74-18405 Detection of short time delays between photic stimuli by means of pattern induced flicker	CORRECTION Water vapor corrections in oxfgen consumption calculations
colors /PIFCs/	A74-18575 CORTICOSTEROIDS
Contributions of the primary chromatic mechanisms to the generation of visual evoked potentials	Effects of exercise on adrenocortical function A74-18570
A74-18408 Spatial frequency phase effects in human vision A74-18409	Free 17-OHCS levels in parotid fluid as indicators of hyperthermic stress [AD-767207] N74-14842
<pre>Swoked potentials specific to spatial patterns of luminance and colour</pre>	COSMONAUTS Problems of space biology, Volume 22: Metabolism
A74-18412 Colour-specificity and monocularity in the visual cortex	under the extreme conditions of spaceflight and during its simulation [NASA-TT-7-15163] N74-13813
A74-18425 COLORINETRY	Cytogenetic investigations of blood leukocytes carried out with crew members of the Soyuz space
A figure of merit for visual colorimeters using spectral stimuli	ships cytogenic studies on Soyuz cosmonauts y74-14801
A74-18427 COMMERCIAL AIRCRAFT Behavioral stress response related to passenger briefings and emergency warning systems	Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes
/Connercial airlines/	N74-14802
COMPRESSED GAS Survival of common bacteria in liquid culture under carbon dioxide at high temperatures A74-18286	COUNTERS Dials v counters - Effects of precision on quantitative reading A74-17293
A74-10288	

CRASH INJURIES SUBJECT INDEX

CDACH THINDING	
CRASH INJURIES	DEHYDRATION
Analysis of head impact using finite	The effect of dehydration and hyperthermia on the
difference theory	homeostasis of the healthy man   NASA-TT-F-15250  N74-13783
(AD-767319) N74-14838	[NASA-TT-F-15250] N74-13783 DEOXYRIBORUCLEIC ACID
An evaluation of the dynamic performance characteristics of anthropomorphic test devices,	Separation of small circular DNA molecules from the blue-green alga Anacystis nidulans
volume 3 [PB-223106/6] N74-14849	A74-17907 DIABETES MELLITUS
CRITICAL PLICKER FUSION Detection of short time delays between photic	Ophthalmological supervision of diabetic flying
stimuli by means of pattern induced flicker	personnel N74-13798
colors /PIFCs/	The problem of diabetes mellitus in aviation
A74-18406	medicine control of hypoglycemic reactions
CROSS CORRELATION	in flying personnel
Cross-correlation analysis of the tension rhythm	N74-13804
in various cerebral formations during the formation of a functional system of defensive type	The repeatability of an abnormal 2-hour glucose
A74-17945	tolerance test diagnosis of diabetes
CULTURE TECHNIQUES	mellitus in pilots
Level of spontaneous phage production in the	N74-13805
lysogenic system E, coli K12 as a test of solar	Qualitative identification of oral effective
activity	antidiabetica in blood serum of humans for
A74-16818	medical evaluation of flight fitness in latent
Lack of bacterial survival under	diabetic flying personnel
Cytherean-oriented conditions	[DLR-FB-73-88] N74-14935
A74-17951	DIAGNOSIS
Lipid composition of slash pine tissue cultures	Technical evaluation report, conclusion and
grown with lunar and earth soils	recommendations pathophysiological standards
174-17955	for flying personnel certification
Survival of common bacteria in liquid culture	N74-13785
under carbon dioxide at high temperatures	Returning airmen with abnormal exercise tests and normal coronary angiograms to flying status
A74-18286	N74-13788
CYTOCHROMES	value of cardiac mechanograms in evaluating flying
Cytochrome c and evolution of the energy acquiring	personnel
system 274-17966	N74-13791
CYTOGENESIS	Asthma in military flying personnel
Cytogenetic analysis of seeds of diploid and	n74-13792
autotetrapoid forms of Crepis capillaris after	The repeatability of an abnormal 2-hour glucose
flight on the artificial earth satellite	tolerance test diagnosis of diabetes
*Kosmos-368,	mellitus in pilots
A74-16667	น74-13805
Cytogenetic investigations of blood leukocytes	DIALS
carried out with crew members of the Soyuz space	Dials v counters - Effects of precision on
ships cytogenic studies on Soyuz cosmonauts	quantitative reading A74-17293
N74-14801	DIASTOLE
Study of reactivity of blood lymphoid cells in	Systolic and diastolic time intervals in pulsus
crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight	alternans - Significance of alternating
blatogenesis delay of lymphocytes	isovolumic relaxation
N74-14862	A74-17302
N74-14862	
_	A74-17302
N74-14862 D	DIETS A74-17302
DAMAGE	A74-17302  DIBTS  The problem of diabetes mellitus in aviation  medicine control of hypoglycemic reactions in flying personnel
D	A74-17302  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms {TR-389-73} N74-13770	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smoke damage to trees. 1: Acute 502
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] DARK ADAPTATION	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute SO2 damage symptoms
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light	DIBTS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  N74-13770
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  DIPHOSPHATES
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms {TR-389-731	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-731 R74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision A74-18404	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  N74-13770  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  N74-13770  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms {TR-389-73} R74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically	DIBTS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHRTES The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIOXIDES Studies of smake damage to trees. 1: Acute 502 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [MASA-TT-F-15225] N74-13776
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-731 R74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NAS-TT-F-15225]  DISPASES Carbon metabolism enzymes and ATP in eyes with disrupted innervation
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli A74-18422	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smoke damage to trees. 1: Acute 502 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225] N74-13776  DISPASES Carbon metabolism enzymes and ATP in eyes with disrupted innervation A74-16739
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli DATA PROCESSING Economical multifactor designs for human factors engineering experiments	DIBTS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [MASA-TT-F-15225]  DISPASES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation  DISPLAY DEVICES
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739) N74-14850	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrome P-USO induction and stimulation of mitotic activity in the bepatic cells of the rat [MASA-TT-F-15225]  DISPLAY BEVICES Dials v counters - Effects of precision on
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73] N74-13770  PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294  Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli  DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739] DATA REDUCTION	DIBTS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  N74-13770  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225]  N74-13776  DISPASES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES  Dials y counters - Effects of precision on quantitative reading
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73] PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739] DATA REDUCTION Computer reduction and analysis of	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225] N74-13776  DISPLAYES Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES Dials v counters - Effects of precision on quantitative reading  A74-17293
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli A74-18422 DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739) N74-14850 DATA REDUCTION Computer reduction and analysis of neurophysicological data with special emphasis on	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrome P-USO induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225] N74-13776  DISPASES Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES Dials v counters - Effects of precision on quantitative reading  A74-17293  Effect of a predictor display on carrier landing
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73] N74-13770  PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli  DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739] N74-14850  DATA REDUCTION Computer reduction and analysis of neurophysiological data with special emphasis on evoked potential frequency analysis	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  N74-13770  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrone P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225]  DISPLAYES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-1379  DISPLAY DEVICES  Dials v counters - Effects of precision on quantitative reading  Fifect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73] PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli  DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739] PATA REDUCTION Computer reduction and analysis of neurophysiological data with special emphasis on evoked potential frequency analysis	DIBTS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225]  DISPHASES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES  Dials v counters - Effects of precision on quantitative reading  Ffect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983]
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli A74-18422 DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739) N74-14850 DATA REDUCTION Computer reduction and analysis of neurophysiological data with special emphasis on evoked potential frequency analysis	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrome P-U50 induction and stimulation of mitotic activity in the bepatic cells of the rat [NAS-TT-F-15225] N74-13776  DISPLASES Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES Dials v counters - Effects of precision on quantitative reading A74-17293  Effect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983] Effect of a predictor display on carrier landing
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73] N74-13770  DARK ADAPTATION Dark adaptation recovery after pulsed light 174-17294 Latency functions in human vision  Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli  DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739] N74-14850  DATA REDUCTION Computer reduction and analysis of neurophysicological data with special emphasis on evoked potential frequency analysis  DECODING The effects of intermittent noise on human serial	DIBTS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225]  DISPHASES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES  Dials v counters - Effects of precision on quantitative reading  Ffect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983]
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli A74-18422 DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739) N74-14850 DATA REDUCTION Computer reduction and analysis of neurophysiological data with special emphasis on evoked potential frequency analysis	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrone P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225] N74-13776  DISPLAYES Carbon metabolism enzymes and ATP in eyes with disrupted innervation A74-16739  DISPLAY DEVICES Dials v counters - Effects of precision on quantitative reading  Fifect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983]  Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms {TR-389-73} R74-13770  PARK ADAPTATION  Dark adaptation recovery after pulsed light R74-17294  Latency functions in human vision  A74-18404  Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli  DATA PROCESSING  Economical multifactor designs for human factors engineering experiments [AD-767739]  DATA REDUCTION  Computer reduction and analysis of neurophysiological data with special emphasis on evoked potential frequency analysis  DECODING  The effects of intermittent noise on human serial decoding performance and physiological response	DIETS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute 502 damage symptoms [TR-389-73]  N74-13770  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrone P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NAS-TT-F-15225]  N74-13776  DISPASES  Carbon metabolism enzymes and ATF in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES  Dials v counters - Effects of precision on quantitative reading  Fifect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983]  Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation [AD-767982]  Detection of short duration light signals presented in the periphery
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73) N74-13770 PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli A74-18422 DATA PROCESSING Economical multifactor designs for human factors engineering experiments (AD-767739) N74-14850 DATA REDUCTION Computer reduction and analysis of neurophysiclogical data with special emphasis on evoked potential frequency analysis  DECODING The effects of intermittent noise on human serial decoding performance and physiological response A74-17292	DIBTS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASA-TT-F-15225]  N74-13776  DISPLAYES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES  Dials v counters - Effects of precision on quantitative reading performance. Part 2: Laboratory mechanization [AD-767983]  Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation [AD-767982]  N74-13822
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms {TR-389-73] PARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli  A74-18422 DATA PROCESSING Economical multifactor designs for human factors engineering experiments [AD-767739] DATA REDUCTION Computer reduction and analysis of neurophysicological data with special emphasis on evoked potential frequency analysis  DECODING The effects of intermittent noise on human serial decoding performance and physiological response A74-17292 DECOMPRESSION SICKNESS	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studdes of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrone P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASa-TT-F-15225] N74-13776  DISPLAYES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation A74-16739  DISPLAY DEVICES  Dials v counters - Effects of precision on quantitative reading A74-17293  Fffect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983]  Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation [AD-767982] Detection of short duration light signals presented in the periphery
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73]	DIBTS  The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES  Studies of smoke damage to trees. 1: Acute SO2 damage symptoms [TR-389-73]  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASa-TT-F-15225]  N74-13776  DISPASES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES  Dials v counters - Effects of precision on quantitative reading  Performance. Part 2: Laboratory mechanization [AD-767983]  Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation [AD-767982]  Detection of short duration light signals presented in the periphery [AD-767320]  N74-14837
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms {TR-389-73} R74-13770 DARK ADAPTATION Dark adaptation recovery after pulsed light A74-17294 Latency functions in human vision  Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli  DATA PROCESSING Economical multifactor designs for human factors engineering experiments [AD-767739] BATA REDUCTION Computer reduction and analysis of neurophysiological data with special emphasis on evoked potential frequency analysis  DECODING The effects of intermittent noise on human serial decoding performance and physiological response A74-17292 DECOMPRESSION SICKNESS The influence of prolonged semi-starvation on the incidence of pulsonary henorrhage following rapid decompression  A74-17953	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIOXIDES  Studies of smake damage to trees. 1: Acute 502 damage symptoms [TR-389-73]  N74-13770  DIPHOSPHATES  The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of nitotic activity in the bepatic cells of the rat [N45A-TT-F-15225]  N74-13776  DISPLASES  Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES  Dials v counters - Effects of precision on quantitative reading  A74-17293  Fffect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983]  Fffect of a predictor display on carrier landing performance. Part 1: Experimental evaluation [AD-767902]  Detection of short duration light signals presented in the periphery [AD-767320]  DISSOLVING  Dissolution of blood clots, possibilities and problems
DAMAGE Studies of smoke damage to trees. 1: Acute SO2 damage symptoms (TR-389-73]	The problem of diabetes mellitus in aviation medicine control of hypoqlycemic reactions in flying personnel  N74-13804  DIONIDES Studies of smake damage to trees. 1: Acute SO2 damage symptoms [TR-389-73] N74-13770  DIPHOSPHATES The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the bepatic cells of the rat [NASa-TT-F-15225] N74-13776  DISPLAY DEVICES Carbon metabolism enzymes and ATP in eyes with disrupted innervation  A74-16739  DISPLAY DEVICES Dials v counters - Effects of precision on quantitative reading  A74-17293  Fffect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983] Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation [AD-767982] Detection of short duration light signals presented in the periphery [AD-767320] N74-13822  DISSOLVING Dissolution of blood clots, possibilities and

DISULFIDES  Effect of disulfiram on oxygen toxicity i	in beagle	BLECTROBECEPHALOGRAPHY Double physiological tests for simple mot	or
dogs	A74-19042	routines of man	A74-16638
DOGS Change in intensity of ultraviolet fluore		Automatic analysis and detection of BEG s	
blood leukocytes in dogs subjected to cirradiation		Cross-correlation analysis of the tension in various cerebral formations during t	he
DRIFT RATE	¥74~14800	formation of a functional system of def	ensive type A74~17945
The analysis of the drift rate of moving sibusoidal gratings		Numerical computer data on functional com and phase shifts in the tension rhythm	of the
DRUGS	A74-18421	cortical and hypothalamic zones during formation of a pain stress	
Clinical aspects of drug-induced diseases	of the	Computer reduction and analysis of	å74~18595
(NASA-TT-F-15235] DYNAMIC CHARACTERISTICS	N74-13772	neurophysiological data with special emerophysiological data with special emeropy analysis	
Some dynamic features of depth perception	a A74-18411	Electroencephalogram and aerospace safety	A74-19012
DYNAMIC MODELS		implications with respect to physical s	standards
Construction of a dynamic model for the l human operator exposed to the action of wideband wibrations		for candidate flyers  ELECTROLYTE BETABOLISE	A74-19050
Wideband Wibrations	A74-17229	Diurnal activity rhythm of sweat glands a	ınd
Functional modeling in the biomechanical of the human operator	analysis	thermal adaptation	A74-16646
•	A74-17230	Some results of the medico-biological	
On the dynamical realization of /#, R/-s abstract cell models application to get		investigations performed under the 'Gem 'Apollo' programs. II - Changes in bloc characteristics, bone apparatus, and mi electrolytic metabolisms of the astrona	od ineral and nuts
E		ELECTROLYTES	A74-19073
EAR		Water and saline balances during prolonge	ed
The dynamic behavior of the ear in separa		innersion in a water bath (NASA-TT-F-15229]	N74-14829
sound spectrum into frequency groups thresholds in auditory frequency perce		ELECTROMAGNETIC ABSORPTION	U/- 1-022
[NASA-TT-F-12719]	ท74-13809	Wavequide modes and light absorption in	
EARTH HYDROSPHERE The effect of certain cosmic and geophys:	ical	photoreceptors	A74-18426
factors on the earth's biosphere R		Perturbations of the terrestrial electron	
EDUCATION		field and the problem of heliobiological	al relations 174-16819
Training in aviation medicine for doctors hospital personnel	s and 124-76852	Fffect of extremely low frequency electrication magnetic fields on roots of "Vicia fabo	ic and
EFFERENT NERVOUS SYSTEMS		[ AD-767387 ]	N74-13816
A centre for accommodative vergence motor	A74-18418	BLECTROMIGEAPHY Double physiological tests for simple more routines of man	tor
<pre>Venous reactivity during static exercise   /bandgrip/ in man</pre>	A74-18565	ELECTROPHONESIS	A74-16638
Efferent innervation of the vestibule	A74-10303	Electrophoresis in space at zero gravity	
[NASA-TT~F-15232] The efferent innervation of the vestibul	N74-13778 ar receptors	[AIAA PARER 74-219] ELECTROPHYSIOLOGY	A74-18854
[NASA-TT-F-15231] EJECTION SEATS	N74-14830	Electrical activity and transmembranar is current of the myocardial fiber of the	onic nonkey
A statistical study of grip retention fo buman ejection seat handling	rce in	/family of cercopithecidae/	A74-16809
(AD-767904) RLECTRIC STIMULI	N74-13815	Some dynamic features of depth perception	n A74-18411
Double physiological tests for simple mo routines of man		ELECTROPLETHYSHOGRAPHY Electrical conductivity variations in a	blood
Effect of local stimulation of pons Varo	A74-16638 Lii on	stream moving at variable rates	A74-16639
respiratory neuron activity and respir	ation A74-16640	ELEVATOR ILLUSION  Blevator illusion - Influences of otolit	h orqan
Stimulation of the olfactory neuro-epith man by long duration direct electric c	elium in urrents A74-16799	activity and neck proprioception  EMOTIONAL PACTORS	A74-18621
BLECTEOCARDIOGRAPHY A new catheter technique for His bundle		On studying the moon scientists psyc factors in scientific interpretation	
via the arm veins	A74-17008	ENDOCRINE GLANDS	A74-17256
Use of bicycle ergometry and sustained h exercise in the diagnosis of presence of coronary heart disease	andqrip and extent	The neuroendocrine functional system - Organization, functioning principles	A74-19074
Importance of the 4 - 5 c/sec rhythm in	A74-17009	ENDOCRINE SECRETIONS  The effect of bedrest on adrenal function	n
Importance of the 4 - 5 cysec invine in determine military flying fitness psychological factors in EBG patterns	DEG	EMERGI CONVERSION	A74-17960
RLRCTROCONDUCTIVITY	ห74-13797	Cytochrome c and evolution of the energy system	
Electrical conductivity variations in a	plood	ENERGY SOURCES	A74-17966
stream moving at variable rates	A74-16639	Mass-energy metabolic characteristics of for spacecraft life support system	alqae

N74-13781

SUBJECT INDEX ENVIRONMENTAL TESTS

BNVIRONABUTAL TESTS	Kinetic principles of interaction of components in
An environmental chamber system for prolonged netabolic studies on small animals	complex biological systems for spacecraft life support equipment
A74-17961	N74-13782
BRZYME ACTIVITY  Carbon metabolism enzymes and ATP in eyes with	Space Biology and Medicine, volume 7, no. 6, 1973 human tolerances to space flight stress
disrupted innervation	[JPES-61020] #74-14794
A74-16739	Regulatory Biology: Depressed Metabolic States [NASA-TM-X-69354] N74-14813
Role of biogenous amines in memory mechanisms A74-16740	Problems of space biology. Volume 20.
Dissolution of blood clots, possibilities and	Mathematical models of biological systems
problems A74-18175	[NASA-TT-F-780] N74-14823 EXPERIMENTAL DESIGN
Possible adsorption analog systems for modeling	Effect of a predictor display on carrier landing
the processes in a living organism	performance, Part 2; Laboratory mechanization IAD-7679831 N74-13821
The effect of dipine on phenobarbital induction of	Skylab S071/S072 circadian periodicity experiment
cytochrome P-450 induction and stimulation of nitotic activity in the hepatic cells of the rat	experimental design and checkout of hardware [NASA-CR-114706] N74-14847
[NASA-TT-F-15225] N74-13776	EXPIRED AIR
influence of transverse accelerations on the	Change in the external respiration function during motion sickness human tolerance to Coriolis
activity of human serum cholinesterase N74-14805	accelerations
EPIDEHIOLOGY	N74-14864
Heliogeophysical factors of the progress of an epidemic process	EXTRASOLAR PLANETS  Communication with extraterrestrial intelligence
A74-16815	Book
RPITHBLIUM Stimulation of the olfactory neuro-epithelium in	A74-17794 Thermodynamics of thermal radiation from stars
man by long duration direct electric currents	photoautotrophs and biospheres
A74-16799 RQUIPHENT SPECIFICATIONS	A74-17965 EXTRATERESTRIAL LIPE
Predicting maintenance task difficulty and	Communication with extraterrestrial intelligence
personnel skill requirements based on design	Book A74-17794
parameters of aviobics subsystems [AD-768415] N74-14852	Thermodynamics of thermal radiation from stars
PRICHETERS	photoautotrophs and biospheres
Use of bicycle ergometry and sustained handgrip exercise in the diagnosis of presence and extent	A74-17965 Interplanetary bult of life for existence and
of coronary heart disease	genesis of live systems around sun
A74-17009 BRROR AWALYSIS	A74-18304  Peasibility of a 'gas exchange' method for
Beasurement errors of CO analyzers and their	detecting extraterrestrial life by
influence on the evaluation of the effect of CO in bumans	identification of nitrogen-fixing microurgabisms A74-19072
A74-16851	EXTRAVERICULAR ACTIVITY
Theoretical approaches to human error /Ergonomic Research Society Lecture 1973/	Analysis of the astronaut's activity when working in free space
A74-17291	A74-16666
ERYTHROCYTES Changes in blood and plasma volumes in dogs during	Physiological and engineering study of advanced thermoregulatory systems for extravehicular
decompression sickness	space suits
BSCHERICHIA A74-19045	[NASA-CR-13/0811] N74-14846 EYE (ANATOMY)
Level of spontaneous phage production in the	Dependence of the mechanical sensitivity of the
lysoqenic system E. coli K12 as a test of solar activity	eye on the illumination conditions and visual adaptation
A74-16818	A74-16644
ETHYL ALCOHOL Influence of ethanol on cardiovascular tolerance	EYE MOVEMENTS The two mechanisms of vision
to +Gz acceleration	A74-18192
A74-19041 Assessment of performance in a link GAT-1 flight	Frequency spectrum of optokinetic mystagmus in the normal monkey
simulator at three alcohol dose levels	A74-18410
EXERCISE (PHYSIOLOGY)	Torsional eye movements and constancy of the visual field
Venous reactivity during static exercise	Visual field A74-18417
/handqrip/ in man	A centre for accommodative vergence motor control
A74-18565 Effects of exercise on adrenocoffical function	A74-18418 Visual imagery differences and eye movements in
A74-18570	the recall of pictures
A simple, accurate technique for predicting maximal aerobic power	A74-18622 The role of gravitational cues in the judgment of
A74-18572	visual orientation
The effect of physical exercise on binding of corticosteroids by transcortin in plasma	A74-18626 The constancy of object orientation - Compensation
[NASA-TT-F-15258] N74-14825	for ocular rotation
EXOBIOLOGY Thermodynamics of thermal radiation from stars	A74-18627 Hand-eye coordination - The role of 'motor memory,'
photoautotrophs and biospheres	A74-18629
A74-17965 Problems of space biology, Volume 19: Problems	·
of the resistance of biological systems	F
[NASA-TT-F-761] N74-13779 Nass-energy metabolic characteristics of algae	FACTOR ANALYSIS  Economical multifactor designs for human factors
for spacecraft life support system	engineering experiments
N74-13781	FAD-767739] N74-14850

SUBJECT INDEX FLYING PERSONNEL

Qualitative identification of oral effective PIELD STRENGTH antidiabetica in blood serum of humans --- for medical evaluation of flight fitness in latent Perturbations of the terrestrial electromagnetic field and the problem of heliobiological relations diabetic flying personnel [DLR-FB-73-88] N74-14835 FIGURE OF MERIT A figure of merit for visual colorimeters using PLIGHT HAZARDS spectral stimuli Elevated blood pressure in aircrew N74-13787 A74-18627 FLIGHT PATHS Simulator evaluation of display concepts for pilot monitoring and control of space shuttle approach and landing. Phase 2: Manual flight control Perception of structure in flashes and in afterimages A74-18414 [ NASA-CR-2359 ] FLASH BLINDNESS FLIGHT SIMULATORS Dark adaptation recovery after pulsed light Assessment of performance in a link GAT-1 flight simulator at three alcohol dose levels A74-17294 Visual information obtained from flashes and from A74-19043 Simulator evaluation of display concepts for pilot A74-18415 monitoring and control of space shuttle approach and landing. Phase 2: Manual flight control FLASH LAMPS and landing, Phas [NASA-CR-2359] PLIGHT STRESS (BIOLOGY) Latency functions in human vision N74-13817 A74-18494 FLIGHT CONTROL The occurrence of hyperlipidemia in flying and Simulator evaluation of display concepts for pilot monitoring and control of space shattle approach and landing. Phase 2: Manual flight control [NASA-CR-2359] 874-13817 nonflying subjects of the USAFSAM cardiovascular disease study 974 - 13803FLIGHT CREWS PLIGHT TIME Pure tone hearing losses in pilots of various aircraft, age and flying time and its significance for inflight speech communication Asymptomatic sinus disease in aircrew members A74-19047 FLIGHT PITHESS Myocardial infarction - An in-flight problem ---N74-13861 fatal aircraft accident investigation for USAF PLOATING Modification of one man life raft A74-19049 N74-14845 [ NASA-CASE-LAR-10241-1] Pathophysiological conditions compatible with flying PLOW VELOCITY [AGARD-CF-129] N74-13784 The thousand aviators: Aging and the blood pressure --- active flying status after age 60 Electrical conductivity variations in a blood stream moving at variable rates A74-16639 N74-13786 Cardiac valvulopathies and flight tolerence --flight safety of pilots suffering aortic
insufficiency FLUID DYNAMICS Fluid flow in the lung: A survey. Numerical solution for gas mixing in a simple model of the lung, and experimental study of flow in a thin walled collapsible tube N74-13790 Asthma in military flying personnel N74-13792 [AD-767638] Idiopathic spontaneous pneumothorax in flying PLHORESCENCE Change in intensity of ultraviolet fluorescence of personnel blood leukocytes in dogs subjected to chronic irradiation Aircrew's fitness for flying duties after vertebral fractures and spinal surgery FLUOROCARBONS N74-13794 Inert cas washout in rats - Enhancement by The risk of minor spinal abnormalities in fluorocarbon infusion aircrews: Evaluation of ejection cases N74-13795 Aeronautical rehabilitation of flying personnel Pathophysiological conditions compatible with flying suffering from acute psychiatric disturbances N70-13796 FAGARD-CP-1291 N74-13784 Technical evaluation report, conclusion and Importance of the 4 - 5 c/sec rhythm in the EEG to
determine military flying fitness --recommendations --- pathophysiological standards for flying personnel certification psychological factors in EEG patterns N74-13797 N74-13785 Blevated blood pressure in aircrev Ophthalmological supervision of diabetic flying N74-13787 personnel Value of cardiac mechanograms in evaluating flying N74-13798 personnel Management of glaucoma in an ageing flying population N74-13799 Idiopathic spontaneous pneumothorax in flying Current aspects of cochlear function applied to personnel N74-13793 flying personnel N74~13800 Aircrew's fitness for flying duties after vertebral fractures and spinal surgery Proteinurias in flying personnel N74-13802 N74-13794 The occurrence of hyperlipidemia in flying and The risk of minor spinal abnormalities in aircrews: Evaluation of ejection cases nonflying subjects of the USAFSAM cardiovascular disease study Aeronautical rehabilitation of flying personnel N74-13803 The problem of diabetes mellitus in aviation suffering from acute psychiatric disturbances N74-13796 medicine --- control of hypoqlycenic reactions Importance of the 4 - 5 c/sec rhythm in the EEG to determine military flying fitness --in flying personnel The repeatability of an abnormal 2-hour glucose psychological factors in EEG patterns tolerance test --- diagnosis of diabetes mellitus in pilots Ophthalmological supervision of diabetic flying N74-13805 personnel German Air Force experiences with certain criteria N74-13798 for granting a waiver Management of glaucoma in an ageing flying population N74-13806 N74-13799

FOOD INTAKE SUBJECT INDEX

Current aspects of cochlear function app	plied to	GEMINI PROJECT  Certain results of the medico-biologic	al
flying personnel	N74-13800	investigation conducted in the Genin	
Proteinarias in flying personnel		programs: Change in weight and indi-	ces of the
The occurrence of hyperlipidemia in fly	ม74-13802	cardiovascular system in astronauts [NASA-TT-F-15261]	N74-14832
nonflying subjects of the USAFSAM care	diovascular	Some results of biomedical investigation	
disease study	N74-13803	conducted during the Gemini and Apol (alterations in blood and skeletal a	lo programs
The problem of diabetes mellitus in avid		mineral and electrolyte metabolism i	
medicine control of hypoglycemic		astronauts)	N74-14834
in flying personnel	N74-13804	[NASA-TT-F-15270] GENETICS	1114 14034
The repeatability of an abnormal 2-hour tolerance test diagnosis of diabe mellitus in pilots	qlucose tes	On the dynamical realization of /M, R/ abstract cell models application to	-systems genetics A74-17846
German Air Force experiences with certa: for granting a waiver	74-13805 in criteria	GEORIGHETISH  The effect of certain cosmic and geoph factors on the earth's biosphere	ysical Russian book
,	N74-13806		A74-16812
Qualitative identification of oral effer antidiabetica in blood serum of human	cti <b>v</b> e	Characterization of a perturbed geomag as a stimulant	netic fleta
nedical evaluation of flight fitness			A74-16816
diabetic flying personnel	N74-14835	Reactions to magnetic fields in the or animals and man	ganisms of
[DLR-FB-73-88] FOOD INTAKE	B14-14033	CHIRDON CON MED	174-16817
The influence of prolonged semi-starvat		GLAUCOMA Management of glaucoma in an ageing fl	vina
incidence of pulmonary hemorrhage fol- rapid decompression	TOATUG	population	. 7 2 4 4
	A74-17953	OF THE DIRECT	¥74-13799
FORBARM Forearm amino acid metabolism during ch.	conic	GLIDE PATES  Effect of a predictor display on carri	er landing
physical inactivity		performance, Part 2: Laboratory me	
FRACTURING	A74-19040	[AD-767983] Effect of a predictor display on carri	N74-13821 er landing
Aircrew's fitness for flying duties aft	er	performance. Part 1: Experimental	evaluation
vertebral fractures and spinal surger	y N74-13794	[AD-767982] GLUCOSE	N74-13822
The risk of minor spinal abnormalities		The repeatability of an abnormal 2-bou	
aircrews: Evaluation of ejection cas		tolerance test diagnosis of diab mellitus in pilots	etes
FREQUENCY RESPONSE	N74-13795	medicos in bitors	N74-13805
Perception of structure in flashes and afterimages	in A74-18414	GRAYITATIONAL EPPECTS Determining excess pressure on the low the body ensuring prevention of orth	
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque	A74-18414		
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions	A74-18414 ncy A74-18420	Determining excess pressure on the low the body ensuring prevention of orth impairments Effect of artificial gravity on thermo	N74-14807 Oregulation.
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups	A74-18414 ncy A74-18420 rating the masking	Determining excess pressure on the low the body ensuring prevention of orth impairments	N74-14807 Oregulation.
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]	A74-18414 ncy A74-18420 rating the masking	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad	N74-14807 Pregulation, Lary N74-14816 Laptation of
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  FREQUENCY SHIFT	a74-18414 ncy 174-18420 rating the masking eption N74-13809	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during expo	N74-14807 Pregulation, Lary N74-14816 Laptation of
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-F-12719]  FREQUENCY SHIFT Chromatic rod activity at mesopic inten	a74-18414 ncy 174-18420 rating the masking eption N74-13809	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad	N74-14807 Oregulation. Lary N74-14816 Daptation of Desure to
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in anditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT Chromatic rod activity at mesopic inten	a74-18414 ncy  A74-18420 rating the masking eption N74-13809 sities A74-18405	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during expe- altered gravity hypothermia for	N74-14807 Pregulation, Lary N74-14816 Laptation of Osure to
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-F-12719]  FREQUENCY SHIFT Chromatic rod activity at mesopic inten	a74-18414 ncy  a74-18420 rating the masking eption W74-13899 sities a74-18405 ferent	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory amimals during expealtered gravity hypothermia for cardiovascular control and cancer the	N74-14807 Oregulation, Lary N74-14816 daptation of Osure to
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the ef vestibular activity on the spontaneou activity of the nerves of the horizon	a74-18414 ncy  a74-18420 rating the masking eption N74-13809 sities a74-18405 ferent s afferent tal canal	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during expeatled gravity hypothermia for cardiovascular control and cancer the	N74-14807 Oregulation, Lary N74-14816 daptation of Osure to
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-F-12719]  FREQUENCY SHIFT Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the ef vestibular activity on the spontaneou	a74-18414 ncy  a74-18420 rating the masking eption N74-13809 sities a74-18405 ferent s afferent tal canal	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during expeatled gravity hypothermia for cardiovascular control and cancer the HAND (ANATOMI)  HAND (ANATOMI)	N74-14807 Pregulation. Lary N74-14816 Raptation of Desure to Rerapy N74-14822
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  FREQUENCY SHIFT Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spacefligh	a74-18414 ncy  174-18420 rating the masking eption b74-13809 sities a74-18405 ferent s afferent tal canal e frog b74-13808 t stresses	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory amimals during expeatered gravity hypothermia for cardiovascular control and cancer the HAND (ANATOMY)  HANDLES	N74-14807 pregulation. Lary N74-14816 laptation of poure to herapy N74-14822 notor memory A74-18629
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]	a74-18414 ncy  174-18420 rating the masking eption b74-13809 sities a74-18405 ferent s afferent tal canal e frog b74-13808 t stresses	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during expeatered gravity hypothermia for cardiovascular control and cancer the HAND (ANATOMI)  HANDLES  A statistical study of grip retention human ejection seat handling (AD-767904)	N74-14807 pregulation. Lary N74-14816 laptation of poure to lerapy N74-14822 notor memory A74-18629
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  FREQUENCY SHIFT  Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spacefligh	a74-18414 ncy  174-18420 rating the masking eption 874-13809 sities A74-18405 ferent s afferent tal canal e frog N74-13808 t stresses irradiations	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory netabolism and intermedi metabolism of animals  Methods for study of cardiovascular adsmall laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the HANDLES  A statistical study of grip retention human ejection seat handling [AD-767904]  HANDLARE	N74-14807 pregulation. N74-14816 laptation of posure to nerapy N74-14822 notor memory A74-18629 force in N74-13815
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  FREQUENCY SHIFT  Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet	a74-18414 ncy  174-18420 rating the masking eption 874-13809 sities A74-18405 ferent s afferent tal canal e frog N74-13808 t stresses irradiations	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during expeatered gravity hypothermia for cardiovascular control and cancer the HAND (ANATOMI)  HANDLES  A statistical study of grip retention human ejection seat handling (AD-767904)	N74-14807 pregulation. Lary  N74-14816 daptation of osure to lerapy N74-14822 notor memory A74-18629 force in N74-13815 y experiment t of hardware
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in anditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT Chromatic rod activity at mesopic intent of the influence of the utricle and the effective of the nerves of the horizon activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  G  GANGLIA  The efferent innervation of the vestibut	a74-18414 ncy  174-18420 rating the masking eption N74-13809 sities A74-18405 ferent s afferent tal canal e frog N74-13808 t stresses irradiations A74-17959 lar receptors	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory netabolism and intermeding metabolism of animals  Methods for study of cardiovascular admail laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the hand-eye coordination - The role of 'm hand-eye coordination - The role of 'm hand-eye coordination and grip retention human ejection seat handling [AD-767904]  HANDUARE  Skylab S071/S072 circadian periodicity experimental design and checkout [NASS-CR-114706]	N74-14816 APTATION OF THE PROPERTY N74-14822  N74-14822  N74-18629  FORCE in N74-13815  FORCE FORCE OF THE PROPERTY N74-13815
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT  Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  GANGLIA	a74-18414 ncy  174-18420 rating the masking eption N74-13809 sities A74-18405 ferent s afferent tal canal e froq N74-13808 t stresses irradiations A74-17959	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular adsmall laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the HAND (ANATOMI) Hand-eye coordination - The role of 'm HANDLES  A statistical study of grip retention human ejection seat handling (AD-767904)  HANDWARE  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (ABATOMY)  Comparative investigations of temperat	N74-14816 iaptation of osure to lerapy N74-14822 notor memory A74-18629 force in N74-18815 y experiment t of hardware N74-14847 ture in
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in anditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT Chromatic rod activity at mesopic intent of the influence of the utricle and the effective of the nerves of the horizon activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  G  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GAS DISSOCIATION  Accurate determination of O2 dissociations.	a74-18414 ncy  174-18420 rating the masking eption N74-13809 sities A74-18405 ferent s afferent tal canal e frog N74-13808 t stresses irradiations A74-17959  lar receptors N74-14830 on curve of	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory netabolism and intermedimetabolism of animals  Methods for study of cardiovascular adsmall laboratory animals during exposite altered gravity hypothermia for cardiovascular control and cancer the cardiovascular control and cancer the HANDLES  A statistical study of grip retention human ejection seat handling [AD-767904]  HANDLES  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (AMATOMY)  Comparative investigations of temperat different regions of the human body	N74-14816 iaptation of osure to lerapy N74-14822 notor memory A74-18629 force in N74-18815 y experiment t of hardware N74-14847 ture in
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT  Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  G  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GAS DISSOCIATION	a74-18414 ncy  a74-18420 rating the masking eption b74-13809 sities a74-18405 ferent safferent tal canal e frog b74-13808 t stresses irradiations a74-17959  lar receptors b74-14830 on curve of th data on	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular adsmall laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the HAND (ANATOMI) Hand-eye coordination - The role of 'm HANDLES  A statistical study of grip retention human ejection seat handling (AD-767904)  HANDWARE  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (ABATOMY)  Comparative investigations of temperat	N74-14816 iaptation of osure to lerapy N74-14822 notor memory A74-18629 force in N74-18815 y experiment t of hardware N74-14847 ture in
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  FREQUENCY SHIFT  Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GAS DISSOCIATION  Accurate determination of O2 dissociation buman blood above 98.7% saturation wi	a74-18414 ncy  174-18420 rating the masking eption N74-13809 sities A74-18405 ferent safferent tal canal e frog N74-13808 t stresses irradiations A74-17959  lar receptors N74-14830 on curve of th data on od from 0	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular adsmall laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the handles  HANDLES  A statistical study of grip retention human ejection seat handling [AD-767904]  HANDLES  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (AMATOMY)  Comparative investigations of temperat different regions of the human body overheating  Analysis of head impact using finites	N74-14816 iaptation of osure to herapy N74-14822 notor memory A74-18629 force in N74-18815 y experiment t of hardware X74-14847 ture in during body N74-14809
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT  Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  G  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GAS DISSOCIATION  Accurate determination of O2 dissociation buman blood above 98.7% saturation with O2 solubility in unmodified human blood.	a74-18414 ncy  a74-18420 rating the masking eption b74-13809 sities a74-18405 ferent safferent tal canal e frog b74-13808 t stresses irradiations a74-17959  lar receptors b74-14830 on curve of th data on	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the HANDLES  A statistical study of grip retention human ejection seat handling [AD-767904]  HARDUARE  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (ABATORY)  Comparative investigations of temperat different regions of the human body overheating  Analysis of head impact using finitializations of theory	N74-14816 iaptation of osure to herapy N74-14822 notor memory A74-18629 force in N74-18815 y experiment t of hardware X74-14847 ture in during body N74-14809
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT Chromatic rod activity at mesopic intent of the influence of the utricle and the eff vestibular activity on the spontaneous activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  G  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GANGLIA  The efferent innervation of 02 dissociation human blood above 98.7% saturation with 02 solubility in unmodified human blood above 98.7% saturation with 02 solubility in unmodified human blood above 98.8% saturation with 037 C  GAS EXCHANGE Feasibility of a 'qas exchange' method	a74-18414 ncy  174-18420 rating the masking eption N74-13809 sities a74-18405 ferent safferent tal canal e frog N74-13808 t stresses irradiations A74-17959  lar receptors N74-14830 on curve of th data on od from 0 A74-18566	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular adsmall laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the HANDLES  A statistical study of grip retention human ejection seat handling (AD-767904)  HANDLES  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (ANATOMY)  Comparative investigations of temperat different regions of the human body overheating  Analysis of head impact using finidifference theory [AD-767319]  READ MOYERENT	N74-14807 pregulation. lary N74-14816 laptation of osure to lerapy N74-14822 notor memory A74-18629 force in N74-18815 y experiment t of hardware x74-14847 ture in during body N74-14809 ite N74-14838
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  FREQUENCY SHIFT  Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GAS DISSOCIATION  Accurate determination of 02 dissociation buman blood above 98.7% saturation with 02 solubility in unmodified human blood of 37 C  GAS EXCHANGE  Feasibility of a 'qas exchange' method detecting extraterrestrial life by	a74-18414 ncy  a74-18420 rating the masking eption N74-13809  sities a74-18405 ferent safferent tal canal e frog N74-13808 t stresses irradiations a74-17959  lar receptors N74-14830 on curve of th data on od from 0 a74-18566 for	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the HANDLES  A statistical study of grip retention human ejection seat handling [AD-767904]  HARDUARE  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (ABATORY)  Comparative investigations of temperat different regions of the human body overheating  Analysis of head impact using finidifference theory [AD-767319]  HEAD HOVERENT  Torsional eye movements and constancy	N74-14807 pregulation. lary N74-14816 laptation of osure to lerapy N74-14822 notor memory A74-18629 force in N74-18815 y experiment t of hardware x74-14847 ture in during body N74-14809 ite N74-14838
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT  Chromatic rod activity at mesopic intent of the influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  G  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GAN DISSOCIATION  Accurate determination of 02 dissociation bussen blood above 98.7% saturation with 02 solubility in unmodified human blood above 98.7% saturation with 03 37 C  GAS EXCHANGE  Feasibility of a 'qas exchange' method detecting extraterrestrial life by identification of nitrogen-fixing mice	a74-18414 ncy  a74-18420 rating the masking eption N74-13809  sities a74-18405 ferent safferent tal canal e frog N74-13808 t stresses irradiations a74-17959  lar receptors N74-14830 on curve of th data on od from 0 a74-18566 for	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory netabolism and intermedi metabolism of animals  Methods for study of cardiovascular adsmall laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the cardiovascular control and cancer the cardiovascular control and cancer the cardiovascular study of grip retention human ejection seat handling [AD-767904]  HANDLES  A statistical study of grip retention human ejection seat handling [AD-767904]  HANDWARE  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (ANATOMY)  Comparative investigations of temperat different regions of the human body overheating  Analysis of head impact using finidifference theory [AD-767319]  HEAD MOVEMENT  Torsional eye movements and constancy visual field	N74-14807 pregulation. lary  N74-14816 laptation of osure to lerapy N74-14822  notor memory A74-18629 force in N74-18815 y experiment t of hardware K74-14847 ture in during body N74-14809 ite N74-14838 of the A74-18417
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in anditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT  Chromatic rod activity at mesopic inten  FROGS  The influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GAS DISSOCIATION  Accurate determination of 02 dissociations and hood above 98.7% saturation with 02 solubility in unmodified human blood to 37 C  GAS EXCHANGE  Feasibility of a 'qas exchange' method detecting extraterrestrial life by identification of nitrogen-fixing mice	a74-18414 ncy  a74-18420 rating the masking eption N74-13809 sities a74-18405 ferent safferent tal canal e frog N74-13808 t stresses irradiations a74-17959  lar receptors N74-14830 on curve of th data on od from 0 a74-18566 for recorganisms a74-19072	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the HANDLES  A statistical study of grip retention human ejection seat handling [AD-767904]  HARDUARE  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (ABATORY)  Comparative investigations of temperat different regions of the human body overheating  Analysis of head impact using finidifference theory [AD-767319]  HEAD HOVERENT  Torsional eye movements and constancy	N74-14807 pregulation. lary  N74-14816 laptation of osure to lerapy N74-14822  notor memory A74-18629 force in N74-18815 y experiment t of hardware K74-14847 ture in during body N74-14809 ite N74-14838 of the A74-18417
Perception of structure in flashes and afterimages  Composite adaptation and spatial freque interactions  The dynamic behavior of the ear in sepa sound spectrum into frequency groups thresholds in auditory frequency perc [NASA-TT-P-12719]  PREQUENCY SHIFT  Chromatic rod activity at mesopic intent of the influence of the utricle and the eff vestibular activity on the spontaneou activity of the nerves of the horizon and the anterior vertical canal in the [NASA-TT-P-15253]  FUNGI  Filamentous fungi exposed to spaceflight including known levels of ultraviolet  G  GANGLIA  The efferent innervation of the vestibut [NASA-TT-P-15231]  GAN DISSOCIATION  Accurate determination of 02 dissociation bussen blood above 98.7% saturation with 02 solubility in unmodified human blood above 98.7% saturation with 03 37 C  GAS EXCHANGE  Feasibility of a 'qas exchange' method detecting extraterrestrial life by identification of nitrogen-fixing mice	a74-18414 ncy  a74-18420 rating the masking eption N74-13809 sities a74-18405 ferent safferent tal canal e frog N74-13808 t stresses irradiations a74-17959  lar receptors N74-14830 on curve of th data on od from 0 a74-18566 for recorganisms a74-19072	Determining excess pressure on the low the body ensuring prevention of orth impairments  Effect of artificial gravity on thermo respiratory metabolism and intermedi metabolism of animals  Methods for study of cardiovascular ad small laboratory animals during exposited altered gravity hypothermia for cardiovascular control and cancer the HANDLES  A statistical study of grip retention human ejection seat handling [AD-767904]  HANDLES  Skylab S071/S072 circadian periodicity experimental design and checkout [NASA-CR-114706]  HEAD (ABATOMY)  Comparative investigations of temperat different regions of the human body overheating  Analysis of head impact using finidifference theory [AD-767319]  BEAD MOYERENT  Torsional eye movements and constancy visual field  The role of gravitational cues in the	N74-14807 pregulation. lary  N74-14816 laptation of osure to lerapy N74-14822  notor memory A74-18629 force in N74-18815 y experiment t of hardware K74-14847 ture in during body N74-14809 ite N74-14838 of the A74-18417

HOMEOSTASIS SUBJECT INDEX

HELTCOPTERS HEAD-UP DISPLAYS Simulator evaluation of display concepts for pilot monitoring and control of space shuttle approach and landing. Phase 2: Manual flight control [NASA-CR-2359] N74-13817 OH-6 A, OH-58 A, and AH-56 A helicopters
(AD-768171) N74-13826 HELIUM-OXYGEN ATHOSPHERES Respiration of poikilothermic animals in a BEART helium-oxygen atmosphere Effects of cholinergic innervation on the N74-14798 manmalian heart - The cardiomodulator tonus **EZHATOLOGY** 174-16797 Usefulness of hematological and biochemical variables for the differentiation of impact acceleration effects HEART DISEASES Use of bicycle ergometry and sustained handgrip exercise in the diagnosis of presence and extent of coronary heart disease 874-16754 HENODYNAMIC RESPONSES Adrenergic beta-receptor blockade and metabolic Systolic and diastolic time intervals in pulsus response to centrifugation stress alternans - Significance of alternating isovolumic relaxation A74-18558 Venous reactivity during static exercise /handgrip/ in man A74-17302 Returning airmen with abnormal exercise tests and A74-18565 normal coronary angiograms to flying status Cardiopulmonary baroreflexes - Integrated N74-13788 responses to sine- and square-wave forcing Cardiac valvulopathies and flight tolerence ---A74-18567 flight safety of pilots suffering aortic HEMODY HABICS insufficiency Angioarchitectonics of the cerebellum cortex veins N74-13790 of man Value of cardiac mechanograms in evaluating flying nersonnel HENOGLOBIN ACCURATE determination of O2 dissociation curve of human blood above 98,7% saturation with data on O2 solubility in unnodified human blood from C to 37 C Systolic and diastolic time intervals in pulsus alternans - Significance of alternating isovolumic relaxation A74-18566 A74-17302 REMORRHAGES Quantitative videoangiocardiography, a method for measuring the heart's pumping function The influence of prolonged semi-starvation on the incidence of pulmonary hemorrhage following 174-17879 rapid decompression X-ray kymographic investigations of the central ray kymographic investigations of the central circulatory organs in therapeutic baths and in hydrostatic pressure elevation. Their RETEROTROPHS On evolution of the photosynthetic piquents technology, results and potential developments: A74-17963 A review N74-13777 BIBERNATION FNASA-TT-F-152271 The role of depressed metabolism in space biology: Hyocardial and cerebral function during exposure to carbon monoxide --- effects of hypoxia on pilot performance An overview Hiberanation, sleep, and thermoregulation N74-13789 HEART MINUTE VOLUME Measurement of the stroke volume by an integral rheogram of the human body [NASA-TT-F-15268] N74-14 HIGH ALTITUDE TESTS Note regarding the high-altitude symptomatology of short-term residents at 1600m following transport to 4300m altitude HEART RATE Predicting effects of heat acclimatization on HIGH FIELD MAGNETS heart rate and rectal temperature Safety with high magnetic field systems [ORNL-TM-4313] A74-18568 A simple, accurate technique for predicting maximal aerobic power HIGH PRESSURE OXIGEN Effect of disulfiram on oxygen toxicity in beagle Influence of ethanol on cardiovascular tolerance apon to +Gz acceleration HIGH TEMPERATORE A74-19041 Pree 17-0HCS levels in parotid fluid as indicators of hyperthermic stress
[AD-767297] N74-14842 Influence of fitness on the blood pressure control system in man A74-19044 HIGH TEMPERATURE ENVIRONMENTS HEAT ACCLIMATIZATION Lack of bacterial survival under Cytherean-oriented conditions Diurnal activity rhythm of sweat glands and thermal adaptation A74-17951 A74-16646 Survival of common bacteria in liquid culture under carbon dioxide at high temperatures Predicting effects of heat acclimatization on heart rate and rectal temperature 174-18286 174-18568 Temporal summation related to the nature of the RIS BUNDLE A new catheter technique for His bundle recordings via the arm veins proximal stimulus for the warmth sense A74-18631 A74-17908 Survival of common bacteria in liquid culture under carbon dioxide at high temperatures HISTANINES Histamine-induced pulmonary vasodilatation in the calf - Relationship to hypoxia 174-18286 Resting metabolism and thermoregulation in the unrestrained rabbit A 74-18563 HISTOLOGY Effect of previous exposure to a steady magnetic A74-18569 Free 17-OHCS levels in parotid fluid as indicators of hyperthermic stress field on the histochemical characteristics of the functional state of the adrenal cortex in x74-14842 X-rayed animals [AD-767207] HEAT TRANSFER Application of the 'Hopscotch' algorithm for The effect of dehydration and hyperthermia on the homeostasis of the healthy man [NASA-TT-F-15250] N74-1378; solving the heat flow equation for the human body

N74-13783

SUBJECT INDEX HORRONE RETABOLISHS

HORMONE METABOLISES	Experimental investigation of visual image
The neuroendocrine functional system -	recognition characteristics probability
Organization, functioning principles	prediction by statistical decision theory A74-18930
A74-1	The effect of dehydration and hyperthermia on the
HUMAN BEHAVIOR	homeostasis of the healthy man
Some problems involving detailed diachronic investigation of processes in the psychic and	
social life of man	Predicting maintenance task difficulty and
A74-1	
On studying the moon scientists psychologic	cal parameters of avionics subsystems
factors in scientific interpretation	[AB-768415] R74-14852
A74-1	
Behavioral stress response related to passenge	Stimulation of the olfactory neuro-epithelium in man by long duration direct electric currents
<pre>briefings and emergency warning systems /Commercial airlines/</pre>	A74-16799
7Commercial allifeer	7882 Measurement errors of CO analyzers and their
Cognitions and 'placebos' in behavioral resear-	
on ambient noise	in humans
<u>1</u> 74-1	7931 A74-16851 park adaptation recovery after pulsed light
HUMAN BODY	A 60 1. A 80 4 4 4 4 4
Specific role of wrists in thermoregulation of A74-1	
An integrated human thermal system and its	sensation, and other illusory sensations
unsteady-state simulation	experienced in aircraft and space flight
£74-1	
Comparative investigations of temperature in	Influence of fitness on the blood pressure control
different regions of the human body during b	ody system in man
overheating	A74-19044 4869 Note regarding the high-altitude symptomatology of
N74-1	
Mineralization of human bone tissue under wate immersion conditions (roentgenophotometric	transport to 4300m altitude
investigation)	A74-19048
N74-1	4810 Macrometric changes in the makeup of the human
Ways to increase the noise immunity of a syste	m body in hypodynamia
for registering the bicelectric potentials o	f [NASA-TT-F-15252] N74-13810
man under the influence of prolonged acceler	ations Change in immunological reactions in human
B74-1	4811 subjects under the influence of unfavorable microclimatic conditions in a pressurized chamber
HUMAN PACTORS ENGINEERING  Construction of a dynamic model for the body o	WITH 46445
human operator exposed to the action of rand	- ·
wideband vibrations	activity of human serum cholinesterase
A74-1	7229 N74-14805
Functional modeling in the biomechanical analy	sis HUMAN TOLERANCES
of the human operator	Study of the effect of machine and instrument 7230 vibrations on the arms of a human operator under
A74-1	
Theoretical approaches to human error /Ergonom Research Society Lecture 1973/	A74-17228
A74-1	7291 Cardiac valvulopathies and flight tolerence
Dials v counters - Effects of precision on	flight safety of pilots suffering actic
quantitative reading	insufficiency
A74-1	
Modes of control in manual control systems	Change in the external respiration function during
[BLL-RTS-78341 B74-1	4844 motion sickness human tolerance to Coriolis accelerations
Safety with high magnetic field systems [ORNL-TM-4313] N74-1	
Economical multifactor designs for human facto	1919
engineering experiments	to the vertical in healthy and deaf-nute subjects
[AD-767739] N74-1	
HUMAN PATHOLOGY	Determining excess pressure on the lower part of
Asymptomatic sinus disease in aircrew members	the body ensuring prevention of orthostatic
A74-1	
Myocardial infarction - Am in-flight problem - fatal aircraft accident investigation for US	
A74-1	
Electroencephalogram and aerospace safety	n74-14808
implications with respect to physical standa	rds SYPEROXIA
for candidate flyers	Effect of disulfiram on oxygen toxicity in beaute
A74-1	
Pathophysiological conditions compatible with [AGARD-CP-129] N74-1	
HUMAN PERPORMANCE	Elevated blood pressure in aircrew
Double physiological tests for simple motor	n74-13787
routines of man	HYPERTHERNIA
174-1	
Theoretical approaches to human error /Ergonom	
Research Society Lecture 1973/	( 4404 11 1 13230 )
The effects of intermittent noise on human ser	
decoding performance and physiological respo	nse overheating
A74-1	7292 N74-14809
Influence of after-movement on muscle memory	HYPERVENTILATION
following isometric muscle contraction	Change in the external respiration function during
A74-1	
Retention of time information in forced-choice duration discrimination	accelerations N74-14804
A74-1	•
On energy-dependent cues in duration discrimin	ation Macrometric changes in the makeup of the human
<u>174-1</u>	
	[NASA-TT-F-15252] N74-13810

SUBJECT INDEX TIPE PARTS

Orthostatic stability in an experiment with 30-day THPACT Analysis of head impact --- using finite hypodynamia --- prophylactic measures for humans N74-14808 difference theory Mineralization of human bone tissue under water [AD-767319] N74-14838 immersion conditions (roentgenophotometric IMPACT ACCELERATION Osefulness of hematological and biochemical variables for the differentiation of impact investigation HYPOKINESIA acceleration effects A70-16754 Forearm amino acid metabolism during chronic physical inactivity IMPEDANCE MEASURBHENTS Electrical conductivity variations in a blood Space Biology and Medicine, volume 7, no. 6, 1973
--- human tolerances to space flight stress stream moving at variable rates [JPRS-61020] INFECTIOUS DISEASES Effect of prolonged hypokinesia on certain functions of the otorhinolaryngological organs Heliogeophysical factors of the progress of an epidemic process [NASA-TT-F-15275] A74-16815 HYPOTHALAMUS INFLATING Modification of one man life raft [NASA-CASE-LAR-10241-1] Numerical computer data on functional connections and phase shifts in the tension rhythm of the cortical and hypothalamic zones during the INPRARED SPECTROSCOPY formation of a pain stress Measurement errors of CO analyzers and their influence on the evaluation of the effect of CO 474-18595 HYPOTHERMIA in bumans Regulatory Biology: Depressed Metabolic States INASA-TM-X-693541 N74-14813 INSTRUMENT PREORS The role of depressed metabolism in space biology: Measurement errors of CO analyzers and their influence on the evaluation of the effect of CO An overview N74-14814 in humans Metabolic effects of artificial environments A74-16851 N74-14817 INTELLIGENCE Communication with extraterrestrial intelligence Hiberanation, sleep, and thermoregulation N74-14818 --- Book Radioprotection in depressed metabolic states: The physiology of helium-cold hypothermia Interplanetary belt of life --- for existence and N74-14819 Intermediary metabolism during brief and prolonged denesis of live systems around sun low tissue temperature --- mammalian thermorequiation during hibernation and INTERSTELLAR COMMUNICATION Communication with extraterrestrial intelligence hypothermia N74-14820 --- Book Methods for study of cardiovascular adaptation of A74-17794 small laboratory animals during exposure to altered gravity --- hypothermia for INTERSTELLAR MATTER Origin of life cardiovascular control and cancer therapy A74-18193 N74-14822 ION CURRENTS Electrical activity and transmembranar ionic current of the myocardial fiber of the monkey /family of cercopithecidae/ Study of venous tonus in the forearm during simulated veightlessness [NASA-TT-F-15228] N74-14828 IRON COMPOUNDS RYPOXIA The influence of long-term intermittent exposures Iron-sulphur proteins - Their possible place in to hypoxia on gastric emptying time in rats A74-17952 the origin of life and the development of early metabolic systems Histamine-induced pulmonary vasodilatation in the A74-17954 calf - Relationship to hypoxia 174-18567 J Dynamics of the respiratory controller during carotid body bypoxia JETTISON SYSTEMS Study: Pilot perceived jettison envelope --- for OH-6 A, OH-58 A, and AH-56 A helicopters [AD-768171] N74-13824 A74-18564 . N74-13820 1 THAGE CONTRAST Experimental investigation of visual image recognition characteristics --- probability LARVAE prediction by statistical decision theory Respiration of poikilothermic animals in a A74-18930 helium-oxygen atmosphere W74-14798 IMAGING TROUNIQUES Quantitative videoangiocardiography, a method for LATERAL OSCILLATION measuring the heart's pumping function The dissociation of sideways movements from movements in depth - Psychophysics The effect of dipine on phenobarbital induction of cytochrome P-450 induction and stimulation of mitotic activity in the hepatic cells of the rat LEARNING CORVES Modes of control in manual control systems [BLL-RTS-7834] [NASA-TT-F-15225] N74-13776 LEUKOCYTES INHUBOLOGY Change in intensity of ultraviolet fluorescence of blood leukocytes in dogs subjected to chronic Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight --- blatogenesis delay of lymphocytes irradiation N74-14800 LIFE DETECTORS Peasibility of a 'gas exchange' method for detecting extraterrestrial life by identification of mitrogen-fixing microorganisms Change in immunological reactions in human subjects under the influence of unfavorable microclimatic conditions in a pressurized chamber A74~19072 Modification of one man life raft [NASA-CASE-LAR-10241-1]

N74~14845

LIPE SUPPORT SYSTEMS SUBJECT INDEX

LIFE SUPPORT SYSTEMS	Evoked potentials specific to spatial patterns of
Problems of space biology, Volume 19: Problems	luminance and colour
of the resistance of biological systems [NASA-IT-F-761] Mass-energy metabolic characteristics of algae	Composite adaptation and spatial frequency interactions A74-1842C
for spacecraft life support system	LUMINOUS INTENSITY
Kinetic principles of interaction of components in complex biological systems for spacecraft	Latency functions in buman vision A74-18404 LUNAR SOIL
life support equipment N74-13782	Lipid composition of slash pine tissue cultures grown with lunar and earth soils
Definition of reverse osmosis requirements for spacecraft wash water recycling rpp-2220(273) N74-13823	A74~17955
LIGHT (VISIBLE RADIATION) Perception of structure in flashes and in afterimages	The influence of prolonged semi-starvation on the incidence of pulmonary hemorrhage following rapid decompression
A74-18414 Photobiological processes and criteria of existence of living systems	A74-17953 Artificial lung - A breakthrough confirmed A74-18196
N74-14796 Frequency threshold for two flash flicker and	Fluid flow in the lung: A survey, Numerical solution for gas mixing in a simple model of the
critical flicker: Why they differ [AD-767322] N74-14840	lung, and experimental study of flow in a thin walled collapsible tube
LIGHT ADAPTATION	[AD-767638] N74-13814 LYMPHOCYTES
Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644	Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight
Bloch's law and a temporal integration model for simple reaction time to light	blatogenesis delay of lymphocytes N74-14802
A74-18624	LYSOGENESIS  Level of spontaneous phage production in the
LIGHT MODULATION  A method of changing the time pattern of a light stimulus without a temporal change in spectral	lysoqenic system E, coli K12 as a test of solar activity  A74-16818
composition A74-18423	A / 77 100 10
LIGHT SOURCES A method of changing the time pattern of a light	M
stimulus without a temporal change in spectral composition	MAGNETIC COILS Safety with high magnetic field systems
174-18423	[ORNI-TM-4313] N74-14848 MAGNETIC DISTURBANCES
LIPID MBTABOLISM Lipid composition of slash pine tissue cultures qrown with lunar and earth soils	Characterization of a perturbed qeomagnetic field as a stimulant
A74-17955 Adrenergic beta-receptor blockade and metabolic	MAGNETIC BFFECTS
response to centrifugation stress A74-18558	The effect of certain cosmic and qeophysical factors on the earth's biosphere Russian book
The occurrence of hyperlipidemia in flying and nonflying subjects of the USAFSAM cardiovascular disease study	A74-16812 Characterization of a perturbed decommendatic field as a stimulant
Y74-13803 The role of brown adipose tissue in temperature regulation of hibernating and hypothernic	174-16816 Reactions to magnetic fields in the organisms of animals and man
mammals N74-14821	#74-16817 Effect of previous exposure to a steady magnetic
LIQUID BREATHING Digital computer analysis of circulatory and	field on the histochemical characteristics of the functional state of the adrenal cortex in
respiratory pressures in water-immersed dogs breathing liquid in force environments of 1 and	X-rayed animals
7 Gy A74-19038	MAGNETIC FIELDS Magnestism in biology
LIVER Clinical aspects of drug-induced diseases of the	[JPRS-60737] Biomagnetism: A annotated bibliography
liver [NASA-TT-F-15235] N74-13772	[NASA-CR-136616] N74-14793 HAINTENANCE
The effect of dipine on phenobarbital induction of cytochrome P-45C induction and stimulation of	Predicting maintenance task difficulty and personnel skill requirements based on design
mitotic activity in the hepatic cells of the rat [NASA-TT-F-15225] N74-13776	parameters of avionics subsystems [AD-768415] N74-14852
Drug metabolism and foreign matter hydroxylase (cytochrone P-45C) in severe hepatic damage in man	MANNALS Regulatory Biology: Depressed Metabolic States
[NASA-TT-F-15276] N74-14827  LOADS (FORCES) A statistical study of grip retention force in	[NASA-TM-X-69354] N74-14813 Effect of artificial gravity on thermoregulation, respiratory metabolism and intermediary
human ejection seat handling [AD-767904] N74-13815	metabolism of animals H74~14816
LONG TERM EFFECTS Some problems involving detailed dischronic	Metabolic effects of artificial environments N74-14817.
investigation of processes in the psychic and social life of man	Hiberanation, sleep, and thermoregulation #74-14818
A74-16814 The influence of long-term intermittent exposures	Radioprotection in depressed metabolic states: The physiology of helium-cold hypothermia N74-14819
to hypoxia on qastric emptying time in rats a74-17952 LUNINANCE	B \ 4 → 1 th ∩ 1 >

A74-18404

Latency functions in human vision

SUBJECT INDEX MONOCULAR VISION

Intermediary metabolism during brief and pro low tissue temperature manmalian thermoregulation during hibernation and hypothermia	longed	HENTAL PERFORMANCE The effects of intermittent noise on humanded decoding performance and physiological	
N74 The role of brown adipose tissue in temperat regulation of hibernating and hypother mammals	ure	METABOLISM  Metabolism under extremal conditions of a flight and during its simulation Bu	
Methods for study of cardiovascular adaptati small laboratory animals during exposure t		Iron-sulphur proteins - Their possible pl the origin of life and the development metabolic systems	lace in of early A74-17954
	-14822	An environmental chamber system for prolo metabolic studies on small animals	
MAN MACHINE SYSTEMS Theoretical approaches to human error /Ergon Research Society Lecture 1973/		Resting metabolism and thermoregulation in unrestrained rabbit	in the
A74 Modes of control in manual control systems	-17291	Sensitization to metabolic and cardiovaso	A74-18569
[BLL-RTS-7834] N74 MANUAL CONTROL	-14844	effects of catecholamines [NASA-TT-F-15220]	N74-13774
A statistical study of grip retention force human ejection seat handling [AD-767904] N74	in -13815	Problems of space biology. Volume 22: ! under the extreme conditions of spacefl during its simulation	
Modes of control in manual control systems	44005	[NASA-TT-F-15163]	N74-13813
[BLL-RTS-7834] N74	-14844	<pre>Metabolic analyzer for Skylab mission [NASA-TM-X-64797]</pre>	174-138 <b>1</b> 9
The dynamic behavior of the ear in separatin sound spectrum into frequency groups m thresholds in auditory frequency perceptio	asking	Regulatory Biology: Depressed Metabolic S [NASA-TM-X-69354] The role of depressed metabolism in space	N74-14813
[NASA-TT-F-12719] N74 MATHEMATICAL MODELS	-13809	An overview	N74-14814
	cs −17846	Effect of artificial gravity on thermored respiratory metabolism and intermediary metabolism of animals	į.
On one method of approximation of processes uniform biological structures	in	Metabolic effects of artificial environme	N74-14816 ents
A74	-18933		N74-14817
Application of the 'Hopscotch' algorithm for solving the heat flow equation for the hum A74		Intermediary metabolism during brief and low tissue temperature mammalian thermoregulation during hibernation and	
Problems of space biology, Volume 2C. Mathematical models of biological systems [NASA-TT-P-780] N74	<b>-1</b> 4823	hypothermia  Drug metabolism and foreign matter hydro:	N74-14829
MEDICAL ELECTRONICS Automatic analysis and detection of EEG spik	es	(cytochrome P-450) in severe hepatic da [NASA-TT-F-15276] MICRORGANISHS	
Implantable telemetry systems for use in ani monitoring	mal	Nathematical evaluation of reliability of functioning of the biological link in	
HEDICAL EQUIPMENT	-17868	bioenqineering system	74-14797
Medicine and technology application adva since 1934	nces - 16853	Change in immunological reactions in human subjects under the influence of unfavoration of the microclimatic conditions in a pressuring	rable
Artificial lung - A breakthrough confirmed			N74-14803
MEDICAL PERSONNEL	-18196	MICHOWAVES  Hazards of microwave radiation and propose	sals for
Training in aviation medicine for doctors an	đ	screening radar technicians [BLL-OA-TRANS-1270-(6196.3)]	N74-14843
hospital personnel A74 BEDICAL SCIENCE	-16852	MILITARY AVIATION Training in aviation medicine for doctors	
Medicine and technology application adva since 1934	nces	hospital personnel	A74-16852
A74	-16853	Asthma in military flying personnel	
Medical progress from aerospace research Biomedical Application Team Program	NASA	MINIATURE ELECTRONIC EQUIPMENT	N74-13792
[AIAA PAPER 74-276] A74 MEMBRANE STRUCTURES	-18678	Implantable telemetry systems for use in monitoring	
Artificial lung - A breakthrough confirmed A74	-18 <b>1</b> 96	MITOSIS	A74-17868
EZEBBANES  Electrical activity and transmembranar ionic current of the myocardial fiber of the mon		The effect of dipine on phenobarbital incompression and stimular mitotic activity in the hepatic cells of	tion of
/family of cercopithecidae/		[ NASA-TT-F-15225 ]	N74-13776
A computer simulation of the otolith membran		NOLECULAR BIOLOGY Separation of small circular DNA molecular the blue-green alga Anacystis midulans	
HEMORY Role of biogenous amines in memory mechanism	is -16740	Origin of life	A74-17907 A74-18193
Influence of after-movement on muscle memory		MONKEYS  Role of corphellum in westibular-cardiac	
following isometric muscle contraction A74 Visual imagery differences and eye movements	-17295	Role of cerebellum in vestibular-cardiac during motion sickness in lower monkey:	
the recall of pictures		HONOCULAR VISION	17914
Α74	-18622	Noise coupling between accommodation and accommodative vergence	
		• • •	A74-18419

MORPHOLOGICAL INDEXES SUBJECT INDEX

Colour-specificity and monocularity in the vis			
cortex A74-1	Effect	s of cholinergic innervation on the Balian heart - The cardiomodulator	e
HORPHOLOGICAL INDEXES	425 114101	alian heart - The Cardiomodulator	TONUS A74-16797
Morphological changes in muscles and nerves of		ULAR TRANSMISSION	
extremities under conditions of overtraining [NASA-TT-F-15251] N74-1	On one	method of approximation of process	ses in
MOTION AFTEREFFECTS	//3 unii	ora biological structures	A74-18933
Motion aftereffects following inspection of	Role o	f cerebellum in vestibular-cardiac	
contrarotating stimuli	duri	ng motion sickness in lower monkey.	s
A74-1 Brightness selectivity in the motion aftereffe			N74-14812
A74-1		of local stimulation of pons Varo.	lii on
BOTION SICKERSS	resp	iratory neuron activity and respire	ation
A useful test in selecting motion-sick-prone individuals	St m		A74-16640
1Rd1v1dda1s	958 disp	scopic aftereffects - Byidence for arity-specific neurones in the hum:	an vienal
Change in the external respiration function du	ing syst		dis *x5ddi
motion sickness human tolerance to Corio	<del>-</del>		A74-18407
accelerations N74-1	804 cort	-specificity and monocularity in t	he <b>v</b> isual
Role of cerebellum in vestibular-cardiac react			A74-18425
during notion sickness in lower nonkeys	NEUROPHIS		
N74-1 Motion sickness incidence as a function of the	812 Carbon	metabolism enzymes and ATP in eye:	s with
frequency and acceleration of vertical	dist	upted innervation	A74-16739
sinusoidal mótion	Stimul	ation of the olfactory neuro-epith	elium in
[AD-768215] N74-1	836 nan	by long duration direct electric c	
Morphological changes in muscles and nerves of	the Inform	ation processing, a behavioral ever	A74-16799
extremities under conditions of overtraining	cort	ical neurons	ac, ana
[NASA-TT-F-15251] N74-1			A74-17946
Analysis of the 'negative phase' of oxygen	The two	o mechanisms of vision	A74-18192
consumption during a recovery period followi	q Comput-	er reduction and analysis of	A14- (0152
intense muscular activity		ophysiological data with special en	mphasis on
A74-1 Study of the effect of machine and instrument	643 evok	ed potential frequency analysis	178-10012
vibrations on the arms of a human operator u	der The ne	uroendocrine functional system -	A74-19012
variable initial loads	Orga	nization, functioning principles	
A74-1 Influence of after-movement on muscle memory	228 Neuropsyci	עמתגדו	A74-19074
following isometric muscle contraction		utical rehabilitation of flying per	csonnel
MUSCULAR TONUS		ering from acute psychiatric distur	bances
On one method of approximation of processes in	NICOTINE		พ74-13796
uniform biological structures	Influe	nce of smoking and nicotine on cere	ebral
A74-1	933 bloo	d flow and metabolic rate of oxygen	
Mathematical evaluation of reliability of	NITROGEN		A74-18561
functioning of the biological link in a		venous→arterial difference of molec	cular
bioengineering system N74-1		ogen in man	A74-18557
HYOCARDIAL INFARCTION	Inert	qas washout in rats - Enhancement h	
<pre>Myocardial infarction - An in-flight problem - fatal aircraft accident investigation for US</pre>		rocarbon infusion	
A74-1		ility of a 'gas exchange' method fo	A74-19039
STOCARDIUM		cting extraterrestrial life by	J1.
Plectrical activity and transmembranar ionic current of the myocardial fiber of the monke	ident	tification of mitrogen-fixing micro	
/family of cercopithecidae/	NOISE GENI	PDAMODS	A74-19072
A74-1		tube application in bio-acoustic re	esearch
HYOELECTRICITY		psychophysiological responses to in	pulse noise
On one method of approximation of processes in uniform biological structures	NOISE INJ	ORIES	A74-16386
A74~1		tube application in bio-acoustic re	esearch
<b>A.1</b>		psychophysiological responses to in	upulse noise
N	Current	t aspects of cochlear function appl	A74-16386
NASA PROGRAMS	flvia	ng personnel	
Medical progress from aerospace research N Biomedical Application Team Program			N74-13800
[AIAA PAPER 74-276] A74-1	#OISE INT 578 Cogniti	ENSITY ions and 'placebos' in behavioral r	research
The role of depressed metabolism in space biol	TY: On at	mbient noise	CDCQTGR
An overview N74-1	NOISE POLI	LULTUR	A74-17931
NECK (AMATOMY)		tion of NIPTS due to continuous noi	se exposure
Elevator illusion - Influences of otolith organ	[AD-7	767205]	N74-14841
activity and neck proprioception A74-1	NOISE SPEC	CTRA Coupling between accommodation and	
NERVES		mmodative vergence	
The influence of the utricle and the efferent		•	A74-18419
vestibular activity on the spontaneous affer activity of the nerves of the horizontal can		BRANCE fects of intermittent noise on huma	n comini
and the anterior vertical canal in the frog		ding performance and physiological	
INASA-TT-F-152531 N74-1	3C 8		A74-17292
		tion of NIPTS due to continuous poi 767205]	.se exposure N74-14841
		· · · · · · · · · · · · · · · · · · ·	

PATTERN RECOGNITION SUBJECT INDEX

WORDGRAPHS Water wapor corrections in oxygen consumption	Orthostatic stability in an experiment with 30-day hypodynamia prophylactic measures for humans N74-14608
calculations	OSBOSI5
NUMBRICAL INTEGRATION Application of the 'Hopscotch' algorithm for	Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775
solving the heat flow equation for the human body 274-19011	Definition of reverse osmosis requirements for
NYSTAGMUS	spacecraft wash water recycling
Properties of a nystagmus evoked by rhythmic photostimulation	OTOLARYNGOLOGY
A74-16637	Effect of prolonged hypokinesia on certain functions of the otorhinolaryngological organs
A useful test in selecting notion-sick-prone individuals	[NASA-TT-F-15275] N74-14826
A74-17958 Frequency spectrum of optokinetic hystagmus in the	OTOLITH ORGANS  Elevator illusion - Influences of otolith organ
normal monkey	activity and neck proprioception A74-18621
277 (0710	A computer simulation of the otolith membrane A74-19610
0	OXIDASE
OCULOGRAVIC ILLUSIONS	Cytochrone c and evolution of the energy acquiring
The gravity reference response, the rotation	system
sensation, and other illusory sensations	A74-17966
experienced in aircraft and space flight A74-17957	OXYGEN BREATHING  Dynamic respiratory response to abrupt change of
The role of gravitational cues in the judgment of visual orientation	inspired CO2 at normal and high oxygen pressure A74-1857?
A74-18626 OCCLOMOTOR NERVES	OXIGEN CONSUMPTION  Effects of exercise on adrenocortical function
Frequency spectrum of optokinetic hystaquus in the	A74-1857C A simple, accurate technique for predicting
normal monkey A74-18410	maximal aerobic power
Noise coupling between accommodation and	A74-18572
accommodative vergence	Water wapor corrections in oxygen consumption calculations
Hand-eye coordination - The role of 'motor memory,'	A74-18575
A74-18629 OLFACTORY PERCEPTION	Respiration of poikilothermic animals in a helium-oxygen atmosphere
Superiority of the discriminatory power of mitral	N74-14798
cells compared to that of olfactory receivers 174-16798	OXYGEN METABOLISM Analysis of the 'negative phase' of oxygen
Stimulation of the olfactory neuro-epithelium in man by long duration direct electric currents	consumption during a recovery period following intense muscular activity
A74-16799	A74-16643 Influence of smoking and nicotine on cerebral
OPBRATOR PERFORMANCE Technique for an experimental investigation of the	blood flow and metabolic rate of oxygen in man
dynamic characteristics of a human operator	174-18561
under random vibrational loads A7.4-17231	OLYGEN TENSION  Accurate determination of 02 dissociation curve of
Dials v counters - Effects of precision on	human blood above 98.7% saturation with data on O2 solubility in unmodified human blood from 0
quantitative reading A74-17293	to 37 C
Relationships between age, ATC experience, and job	174-18566
ratings of terminal area traffic controllers A74-19046	End-tidal oxyqen analysis using a synchronous pulse qenerator
OPERATORS (PERSONNEL)	∆74-18573
Hazards of microwave radiation and proposals for screening radar technicians	Р
IBLL-OA-TRANS-127C-(6196, 3) ] N74-14843	r
OPHTHALMODYNAMOMETRY	PAIN Numerical computer data on functional connections
<pre>Cphthalmological supervision of diabetic flying     personnel</pre>	and phase shifts in the tension rhythm of the
N74-13798	cortical and hypothalamic zones during the formation of a pain stress
OPTICAL ILLUSION Accentuation of the perceived velocity in	A74-18595
intermittent illumination Influence of the phase relationships	PASSENGERS Behavioral stress response related to passenger
A74-18075	briefings and emergency warning systems
OPTICAL PROPERTIES Optical function of human peripheral comes	/Commercial airlines/ A74-17882
174-18401	PATHOLOGICAL EFFECTS Usefulness of hematological and biochemical
OPTICAL TRACKING Hand-eye coordination - The role of 'motor memory.'	variables for the differentiation of impact
A74-18629	acceleration, effects
Brightness selectivity in the motion aftereffect A74-18630	A74-16754 Clinical aspects of drug-induced diseases of the
OPGANS Influence of nature of distribution of absorbed	liver [NASA-TT-F-15235] N74-13772
dose on radiation damage radiosensitivity of	PATTERN RECOGNITION  The effects of stimulus structure and familiarity
rat organs and systems N74-14799	on same-different comparison reaction time in visual tasks
ORTHOSTATIC TOLERANCE Determining excess pressure on the lower part of	A74-18623
the body ensuring prevention of orthostatic	Experimental investigation of visual image recognition characteristics probability
impairments N74-14807	prediction by statistical decision theory
	A74-18930

PATTERN REGISTRATION SUBJECT INDEX

PATTERN REGISTRATION	
	PHYSICAL EXERCISE
Evoked potentials specific to spatial patterns of	Use of bicycle ergometry and sustained handgrip
luminance and colour	exercise in the diagnosis of presence and extent
A74-18412	of coronary heart disease
PERFORMANCE PREDICTION	A74-17669
Considerations and quidelines concerning the	Morphological changes in muscles and nerves of the
psychological selection of candidate pilots	extremities under conditions of overtraining
174-16770	[NASA-TT-F-15251] N74-13773
	Orthostatic stability in an experiment with 30-day
PERIPHERAL CIRCULATION	
A noninvasive pressure-pulse recorder -	hypodynamia prophylactic measures for humans
Development and rationale	N74-14808
A74-17910	The value of exercise at one-half earth gravity in
Venous reactivity during static exercise	preventing adaptation to simulated weightlessness
/handgrip/ in man	[NASA-CR-136569] N74-14824
174-18565	PHYSICAL PITNESS
PERIPHERAL VISION	Influence of fitness on the blood pressure control
Optical function of human peripheral comes	system in map
A74-18401	A74-19044
Detection of short duration light signals	The value of exercise at one-half earth gravity in
presented in the periphery	preventing adaptation to simulated weightlessness
[AD-767320] N74-14837	[NASA-CR-136569] N74-14824
PERSONNEL SELECTION	PHYSIOLOGICAL DEFENSES
A useful test in selecting motion-sick-prone	Cross-correlation analysis of the tension rhythm
individuals	in various cerebral formations during the
A74-17958	formation of a functional system of defensive type
Electroencephalogram and aerospace safety	A74-17945
implications with respect to physical standards	PHYSIOLOGICAL EPPECTS
for candidate flyers	Effects of cholinergic innervation on the
174-1905C	mammalian heart - The cardiomodulator tonus
PERSPIRATION	A74-16797
Diurnal activity rhythm of sweat glands and	The influence of long-term intermittent exposures
thermal adaptation	to bypoxia on qastric emptying time in rats
A74-16646	A74-17952
PHARMACOLOGY	The effect of bedrest on adrenal function
Role of biogenous amines in memory mechanisms	A74-17960
A74-16740	Note regarding the high-altitude symptomatology of
Effects of cholinergic innervation on the	short-term residents at 1600m following
mammalian heart - The cardiomodulator tonus	transport to 4300m altitude
A74-16797	A74-19048
Effect of disulfiran on oxygen toxicity in beagle	Effect of previous exposure to a steady magnetic
qod2	field on the histochemical characteristics of
174-19042	the functional state of the adrenal cortex in
PRENOBARBITAL	X-rayed animals
The effect of dipine on phenobarbital induction of	A74-19075
cytochrome P-450 induction and stimulation of	Macrometric changes in the makeup of the human
mitotic activity in the hepatic cells of the rat	body in hypodynamia
[NASA-TT-F-15225] N74-13776	[ NASA-TT-F-15252] N74-13810
PHOSPHENE	PHISIOLOGICAL RESPONSES
Dependence of the mechanical sensitivity of the	Shock tube application in bio-acoustic research
eye on the illumination conditions and visual	psychophysiological responses to impulse noise
adaptation	A74-16386
A74-16644	Properties of a nystagmus evoked by rhythmic
PHOTICS	
	photostimulation
Detection of short time delays between photic	174-16637
stimuli by means of pattern induced flicker	A74-16637 Effect of local stimulation of pons Varolii on
stimuli by means of pattern induced flicker colors /PIFCs/	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration
stimuli by means of pattern induced flicker colors /PIFCs/ 174-18406	A74-16637 Effect of local stimulation of pons Varolii on respiration activity and respiration A74-16640
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS  A74-18406	A74-16637 Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS  Optical function of human peripheral cones	A74-16637 Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen consumption during a recovery period following
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406 PHOTORECEPTORS Optical function of human peripheral cones  A74-18401	A74-16637 Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS Optical function of human peripheral cones A74-18401 Chromatic rod activity at mesopic intensities	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration  A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS Optical function of human peripheral cones A74~18401 Chromatic rod activity at mesopic intensities A74-18405	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643 Dependence of the mechanical sensitivity of the
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS Optical function of human peripheral cones A74-18401 Chromatic rod activity at mesopic intensities A74-18405 Wavequide modes and light absorption in photoreceptors	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration  A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS	Effect of local stimulation of pons Varilii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity  A74-16643 Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644 Superiority of the discriminatory power of mitral
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS Optical function of human peripheral cones A74-18401 Chromatic rod activity at mesopic intensities A74-18405 Wavequide modes and light absorption in photoreceptors  A74-18426 PHOTOSYNTHESIS On evolution of the photosynthetic pigments	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS Optical function of human peripheral cones A74-18401 Chromatic rod activity at mesopic intensities A74-18405 Wavequide modes and light absorption in photoreceptors A74-18426 PHOTOSYNTHESIS On evolution of the photosynthetic pigments A74-17963	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers  A74-16798
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS  On evolution of the photosynthetic pigments  A74-17963  Ferredoxins in the evolution of photosynthetic	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity  A74-16643 Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644 Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers  A74-16798 Study of the effect of machine and instrument
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS Optical function of human peripheral cones A74-18401 Chromatic rod activity at mesopic intensities A74-18405 Wavequide modes and light absorption in photoreceptors  A74-18426 PHOTOSYNTHESIS On evolution of the photosynthetic pigments A74-17963 Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS Optical function of human peripheral cones A74-18401 Chromatic rod activity at mesopic intensities A74-18405 Wavequide modes and light absorption in photoreceptors A74-18426  PHOTOSYNTHESIS On evolution of the photosynthetic pigments A74-17963 Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants A74-17964	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration  A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers  A74-16798  Study of the effect of machine and instrument variable initial loads
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS  On evolution of the photosynthetic pigments  A74-17963  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964  Thermodynamics of thermal radiation from stars	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of crygen consumption during a recovery period following intense muscular activity  A74-16643 Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644 Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers  A74-16798 Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS  On evolution of the photosynthetic pigments  A74-17963  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964  Thermodynamics of thermal radiation from stars photoautotrophs and biospheres	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial
stimuli by means of pattern induced flicker colors /PIFCs/  174-18406  PHOTORECEPTORS Optical function of human peripheral cones  174-18401 Chromatic rod activity at mesopic intensities 174-18405 Wavequide modes and light absorption in photoreceptors  174-18426  PHOTOSYNTHESIS On evolution of the photosynthetic piquents 174-17963 Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants 174-17964 Thermodynamics of thermal radiation from stars photoautotrophs and biospheres	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration  A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers  A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response
stimuli by means of pattern induced flicker colors /PIFCs/  174-18406  PHOTORECEPTORS  Optical function of human peripheral cones  174-18401  Chromatic rod activity at mesopic intensities  174-18405  Wavequide modes and light absorption in photoreceptors  174-18426  PHOTOSYNTHESIS  On evolution of the photosynthetic pigments  174-17963  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants 174-17964  Thermodynamics of thermal radiation from stars photoautotrophs and biospheres  174-17965  Photobiological processes and criteria of	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response A74-17292
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS  On evolution of the photosynthetic pigments  A74-17963  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964  Thermodynamics of thermal radiation from stars photoautotrophs and biospheres  A74-17965  Photobiological processes and criteria of existence of living systems	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration  A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers  A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response  A74-17292  Spatial interactions between the red- and
stimuli by means of pattern induced flicker colors /PIFCs/  174-18406  PHOTORECEPTORS Optical function of human peripheral cones  174-18401 Chromatic rod activity at mesopic intensities 174-18405 Wavequide modes and light absorption in photoreceptors  174-18426  PHOTOSYNTHESIS On evolution of the photosynthetic piquents 174-17963 Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants 174-17964 Thermodynamics of thermal radiation from stars photoautotrophs and biospheres 174-17965 Photobiological processes and criteria of existence of living systems	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response A74-17292  Spatial interactions between the red- and green-sensitive colour mechanisms of the human
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS Optical function of human peripheral cones  A74-18401 Chromatic rod activity at mesopic intensities A74-18405 Wavequide modes and light absorption in photoreceptors  A74-18426 PHOTOSYNTHESIS On evolution of the photosynthetic pigments A74-17963 Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants A74-17964 Thermodynamics of thermal radiation from stars photoautotrophs and biospheres A74-17965 Photobiological processes and criteria of existence of living systems  PHYSICAL EXAMINATIONS	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643 Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644 Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers  A74-16798 Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228 The effects of intermittent noise on human serial decoding performance and physiological response  A74-17292 Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS  On evolution of the photosynthetic pigments  A74-17963  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964  Thermodynamics of thermal radiation from stars photoautotrophs and biospheres  A74-17965  Photobiological processes and criteria of existence of living systems  PHYSICAL EXAMINATIONS  Technical evaluation report, conclusion and	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response A74-17292  Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS Optical function of human peripheral cones  A74-18401 Chromatic rod activity at mesopic intensities A74-18405 Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS On evolution of the photosynthetic piquents A74-17963 Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants A74-17964 Thermodynamics of thermal radiation from stars photoautotrophs and biospheres A74-17965 Photobiological processes and criteria of existence of living systems  N74-14796  PHYSICAL EXAMINATIONS Technical evaluation report, conclusion and recommendations pathophysiological standards	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response A74-17292  Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system  A74-18403  Contributions of the primary chromatic mechanisms
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS Optical function of human peripheral cones A74-18401 Chromatic rod activity at mesopic intensities A74-18405 Wavequide modes and light absorption in photoreceptors A74-18426 PHOTOSYNTHESIS On evolution of the photosynthetic pigments Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants A74-17964 Thermodynamics of thermal radiation from stars photoautotrophs and biospheres A74-17965 Photobiological processes and criteria of existence of living systems  PHYSICAL EXAMINATIONS Technical evaluation report, conclusion and recommendations pathophysiological standards for flying personnel certification	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen. consumption during a recovery period following intense nuscular activity  A74-16643 Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644 Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798 Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228 The effects of intermittent noise on human serial decoding performance and physiological response A74-17292 Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system  A74-18403 Contributions of the primary chromatic mechanisms to the generation of visual evoked potentials
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS  On evolution of the photosynthetic pigments  A74-17963  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964  Thermodynamics of thermal radiation from stars photoautotrophs and biospheres  A74-17965  Photobiological processes and criteria of existence of living systems  Fechnical evaluation report, conclusion and recommendations pathophysiological standards for flying personnel certification  N74-13785	A74-16637  Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers  A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response A74-17292  Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system  A74-18408  A74-18408
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS On evolution of the photosynthetic pigments  A74-17963  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964  Thermodynamics of thermal radiation from stars photoautotrophs and biospheres  A74-17965  Photobiological processes and criteria of existence of living systems  N74-14796  PHYSICAL EXAMINATIONS  Technical evaluation report, conclusion and recommendations pathophysiological standards for flying personnel certification  N74-13785  German Air Force experiences with certain criteria	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response A74-17292  Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system  A74-18403  Contributions of the primary chromatic mechanisms to the generation of visual evoked potentials  A74-18408  Motion aftereffects following inspection of
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401 Chromatic rod activity at mesopic intensities  A74-18405 Wavequide modes and light absorption in photoreceptors  A74-18426 PHOTOSYNTHESIS On evolution of the photosynthetic pigments  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964 Thermodynamics of thermal radiation from stars photoautotrophs and biospheres  A74-17965 Photobiological processes and criteria of existence of living systems  Fechnical evaluation report, conclusion and recommendations pathophysiological standards for flying personnel certification  N74-13785 German Air Force experiences with certain criteria for granting a waiver	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response A74-17292  Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system  A74-18403  Contributions of the primary chromatic mechanisms to the generation of visual evoked potentials A74-18408  Motion aftereffects following inspection of contrarotating stimuli
stimuli by means of pattern induced flicker colors /PIFCs/  A74-18406  PHOTORECEPTORS Optical function of human peripheral cones  A74-18401  Chromatic rod activity at mesopic intensities  A74-18405  Wavequide modes and light absorption in photoreceptors  A74-18426  PHOTOSYNTHESIS On evolution of the photosynthetic pigments  A74-17963  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964  Thermodynamics of thermal radiation from stars photoautotrophs and biospheres  A74-17965  Photobiological processes and criteria of existence of living systems  N74-14796  PHYSICAL EXAMINATIONS  Technical evaluation report, conclusion and recommendations pathophysiological standards for flying personnel certification  N74-13785  German Air Force experiences with certain criteria	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640 Analysis of the 'negative phase' of oxygen. consumption during a recovery period following intense muscular activity  A74-16643 Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644 Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798 Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228 The effects of intermittent noise on human serial decoding performance and physiological response A74-17292 Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system  A74-18408 Motion aftereffects following inspection of contrarotating stimuli  A74-18408
stimuli by means of pattern induced flicker colors /PIFCs/  PHOTORECEPTORS  Optical function of human peripheral cones  A74-18401 Chromatic rod activity at mesopic intensities  A74-18405 Wavequide modes and light absorption in photoreceptors  A74-18426 PHOTOSYNTHESIS On evolution of the photosynthetic pigments  Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants  A74-17964 Thermodynamics of thermal radiation from stars photoautotrophs and biospheres  A74-17965 Photobiological processes and criteria of existence of living systems  Fechnical evaluation report, conclusion and recommendations pathophysiological standards for flying personnel certification  N74-13785 German Air Force experiences with certain criteria for granting a waiver	Effect of local stimulation of pons Varolii on respiratory neuron activity and respiration A74-16640  Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense nuscular activity  A74-16643  Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation  A74-16644  Superiority of the discriminatory power of mitral cells compared to that of olfactory receivers A74-16798  Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads  A74-17228  The effects of intermittent noise on human serial decoding performance and physiological response A74-17292  Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system  A74-18403  Contributions of the primary chromatic mechanisms to the generation of visual evoked potentials A74-18408  Motion aftereffects following inspection of contrarotating stimuli

PSYCHOLOGICAL PACTORS SUBJECT INDEX

Dynamic respiratory response to abrupt change of inspired CO2 at normal and high oxygen pressure a74-18571 Effect of extremely low frequency electric and magnetic fields on roots of 'Vicia faba' FAD-7673871 PREUMOTHORAL The efferent innervation of the vestibular receptors Idiopathic spontaneous pneumothorax in flying [NASA-TT-F-15231] N74-14830 Conducted during the Genini and Apollo programs personnel POSITIONING DEVICES (MACHINERY) (alterations in blood and skeletal apparatus, Reference apparatus for medical ultrasonic mineral and electrolyte metabolism in the astronauts) transducer [NASA-CASE-ARC-10753-1] N74-1381B [NASA-TT-F-1527C] N7

PHYSIOLOGICAL TESTS

Usefulness of hematological and biochemical 170-14R34 PREDICTION ANALYSIS TECHNIQUES A simple, accurate technique for predicting maximal aerobic power variables for the differentiation of impact A74-18572 acceleration effects A74-16754 PRESSURE EFFECTS The repeatability of an abnormal 2-hour qlucose tolerance test --- diagnosis of diabetes Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation mellitus in pilots N74-13805 PRESSURE MEASUREMENTS PIERCING Digital computer analysis of circulatory and Modification of one man life raft [NASA-CASE-LAR-10241-1] respiratory pressures in water-immersed dogs breathing liquid in force environments of 1 and N74-14845 PIGHENTS On evolution of the photosynthetic piquents A74-19038 A74-17963 PRESSURE RECORDERS A noninvasive pressure-pulse recorder -Development and rationale Considerations and quidelines concerning the psychological selection of candidate pilots A74-17910 Assessment of performance in a link GAT-1 flight PRESSURE SUITS simulator at three alcohol dose levels Determining excess pressure on the lower part of the body ensuring prevention of orthostatic A76-19043 impairments Myocardial and cerebral function during exposure to carbon monoxide --- effects of hypoxia on PRESSURIZED CABINS pilot performance Change in immunological reactions in human subjects under the influence of unfavorable microclimatic conditions in a pressurized chamber Cardiac valvulopathies and flight tolerence --flight safety of pilots suffering aortic N74-14803 insufficiency PROPAGATION MODES N74-13790 Effect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization [AD-767983] N74-1382 Wavenuide modes and light absorption in photoreceptors A74-18426 N74-13821 Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation PROPERLAXIS Mineralization of human bone tissue under water immersion conditions (roentgenophotometric [AD-767982] PILOT SELECTION investigation) Considerations and quidelines concerning the psychological selection of candidate pilots Elevator illusion - Influences of otolith organ A74-16770 activity and neck proprioception Technical evaluation report, conclusion and recommendations --- pathophysiological standards for flying personnel certification 174-18621 PROSTHETIC DEVICES Artificial lung - A breakthrough confirmed N74-13785 A74-18196 Elevated blood pressure in aircrew N74-13787 PROTEIN METABOLISM Mixed venous-arterial difference of molecular Returning airmen with abnormal exercise tests and nitrogen in man normal coronary angiograms to flying status 174-19557 N74-13788 Forearm amino acid metabolism during chronic physical inactivity Asthma in military flying personnel N74-13792 A74-19040 PLANETARY ENVIRONMENTS Proteinurias in flying personnel Lack of bacterial survival under N74-13802 Cytherean-oriented conditions A74-17951 PROTEINS Interplanetary belt of life --- for existence and Iron-sulphur proteins - Their possible place in the origin of life and the development of early genesis of live systems around sun metabolic systems A74-18304 PLANETARY QUARANTINE Ferredoxins in the evolution of photosynthetic An observation about the relative hardiness of systems from anaerobic bacteria to higher plants bacterial spores and planetary quarantine A74~17956 Electrophoresis in space at zero gravity Scientific and technical services directed toward [AIAA PAPER 74-210]
PSYCHOACOUSTICS the development of planetary quarantine measures for automated spacecraft [NASA-CR-136613] Cognitions and 'placebos' in behavioral research on ambient noise PLANTS (BOTANY) Cytogenetic analysis of seeds of diploid and autotetrapoid forms of Crepis capillaris after flight on the artificial earth satellite PSYCHOLOGICAL FACTORS Considerations and quidelines concerning the psychological selection of candidate pilots Kosmos-368, A74-16770 Perredoxins in the evolution of photosynthetic Some problems involving detailed diachronic systems from anaerobic bacteria to higher plants investigation of processes in the psychic and social life of man A74-17964 Rotary plant growth accelerating apparatus --- for weightlessness simulation [NASA-CASE-ARC-10722-1] N74-13807

SUBJECT INDEX PSYCHONOTOR PERFORMANCE

On studying the moon scientists psy- factors in scientific interpretation	chological	Analysis of the results of an investigation of a biological effect of heavy ions with different	
PSYCHOMOTOR PERFORMANCE	A74-17256	linear energy losses on the basis of a theoretical inactivation model (interpretation	
Cognitions and 'placebos' in behavioral on ambient noise	research	of experiments with E, coli) N74-14	
PSYCHOPHYSICS	A74-17931	Cytogenetic investigations of blood leukocytes carried out with crew members of the Soyu2 sp	ace
The dissociation of sideways movements : movements in depth - Psychophysics	from	ships cytogenic studies on Soyuz cosmonau N74-14:	
PSYCHOPHYSIOLOGY	A74-18413	Hazards of microwave radiation and proposals for screening radar technicians	
Psychophysiology: Relationships in rat- speed of learning and duration of par-		[BLL-OA-TRANS-1270-(6196.3)] N74-14 RADIATION HAZARDS	843
sleep during the nycthemeric cycle [NASA-TT-F-15222]	N74-13775	X-ray fluorometer and solid state detector calibration for biologic specimen analysis	
PSYCHOTHERAPY Aeronautical rehabilitation of flying p		[AD-767585] N74-14 RADIATION INJURIES	
suffering from acute psychiatric dist	urbances N74-13796	Influence of nature of distribution of absorbed dose on radiation damage radiosensitivity	
PULHOWARY CIRCULATION Mixed venous-arterial difference of mol-	ecular	rat organs and systems N74-14 RADIATION PROTECTION	799
nitroqen in man	A74-18557	Radioprotection in depressed metabolic states:	
Pulmonary capillary blood flow during n spontaneous breathing in man		The physiology of helium-cold hypothermia N74-14	819
Shottentiades prograted to may	A74-18562	RADIATION TOLERANCE	
Histamine-induced pulmonary vasodilatat calf - Relationship to hypoxia		Change in intensity of ultraviolet fluorescence blood leukocytes in dogs subjected to chronic	
Cardiopulmonary baroreflexes - Integrat	A74-18563 ed	irradiation N74-14	800
responses to sine- and square-wave fo	rcing A74-18567	RADIO TRLEKETRY Implantable telemetry systems for use in animal	
PULHOMARY PUNCTIONS Pressure-flow relationships in the isol	ated canine	nonitoring A74-17	'86B
trachea PULMONARY IRSIONS	A74-18560	Effect of extremely low frequency electric and magnetic fields on roots of 'Vicia faba'	
The influence of prolonged semi-starvat incidence of pulmonary hemorrhage fol		[AD-767387] N74-13 RADIOGRAPHY	816
rapid decompression	A74-17953	X-ray kymographic investigations of the central circulatory organs in therapeutic baths and i	
PULSE RATE Role of cerebellum in vestibular-cardia	c reactions	hydrostatic pressure elevation. Their technology, results and potential development	.s:
during motion sickness in lower monke	ys N74-148†2	A review [NASA-TT-F-15227] N74-13	777
PUPILLOMETRY A figure of merit for visual colorimete	rs usinq	RANDOM VIBRATION  Construction of a dynamic model for the body of	
spectral stimuli	A74-18427	human operator exposed to the action of rando wideband vibrations A74-17	
Q		Punctional modeling in the biomechanical analys of the human operator	
QUALITATIVE ANALYSIS  Qualitative identification of oral effe	atiro	174-17 Technique for an experimental investigation of	
antidiabetica in blood serum of human		dynamic characteristics of a human operator	cne
medical evaluation of flight fitness diabetic flying personnel		under random vibrational loads 474-17	/231
[DLR-FE-73-88]	N74-14835	<pre>BARE GASES     Inert qas washout in rats - Enhancement by</pre>	
R		fluorocarbon infusion 374~19	0039
RADAR EQUIPMENT	nesle for	RATS  Perchanhagialagu: Palatianghing in rate between	. D
Hazards of microwave radiation and prop screening radar technicians fBLL-0A-TRANS-1276-(6196.3) 1	N74-14843	Psychophysiology: Relationships in rats betwee speed of learning and duration of paradoxical sleep during the nyothemeric cycle	
RADIATION DISTRIBUTION Influence of nature of distribution of		[NASA-TT-F-15222] N74-13 Deficiency in retention of conditioning after	3775
dose on radiation damage radiosen rat organs and systems		deprivation of paradoxical sleep in rats fwssA-TT-F-152231 N74-13	8811
·	N74-14799	Effect of acquisition level on increased	
RADIATION EFFECTS  The effect of certain cosmic and qeophy		paradoxical sleep duration due to avoidance conditioning in the rat	
factors on the earth's biosphere	Russian book 174-16812	[NASA-TT-F-15221] N74-13 Influence of nature of distribution of absorbed	
Perturbations of the terrestrial electr field and the problem of heliobiologi	omagnetic	dose on radiation damage radiosensitivity rat organs and systems	
· · · · · · · · · · · · · · · · · · ·	A74-16819	N74-14	1799
Filamentous fundi exposed to spacefligh including known levels of ultraviolet		REACTION KINETICS  Kinetic principles of interaction of components  complex biological systems for spacecraft	
Effect of previous exposure to a steady field on the histochemical characteri	magnetic stics of	life support equipment N74-13	
the functional state of the adrenal c X-rayed animals		BEACTION TIME Dark adaptation recovery after pulsed light	
Space Biology and Medicine, volume 7, n	A74-19075	A74-17 Latency functions in human vision	1294
f JPRS-61020   f JPRS-61020   f JPRS-61020		Latency functions in human vision A74-18	1404

SUBJECT INDEX SCIENTISTS

The effects of stimulus structure and for same-different comparison reactin visual tasks	amiliarity tion time	RETENTION (PSYCHOLOGY) Retention of time information in forced-choice duration discrimination
	174-18623	A74-18625
Bloch's law and a temporal integration simple reaction time to light	model for	Deficiency in retention of conditioning after deprivation of paradoxical sleep in rats
Temporal Summation related to the natur		[NASA-TT-F-15223] N74-1381' RETINA NASA-TT-F-15223] N74-1381'
proximal stimulus for the warmth sens REDUCED GRAVITY	a74-18631	Properties of a nystagmus evoked by rhythmic photostimulation A74-1663
Electrophoresis in space at zero gravit		The two mechanisms of vision
[AIAA PAPER 74-210] REFLEIES	174-18854	A74-18192 Optical function of human peripheral cones
Double physiological tests for simple moutines of man		A74-1840° Chromatic rod activity at mesopic intensities
Role of biogenous amines in memory mech	A74-16638 anisms A74-16740	A74-18409 A figure of merit for visual colorimeters using spectral stimuli
Role of the cerebellum and the vestibul apparatus in regulation of orthostati	ar	A74-1842
in the cat	A74-18452	Detection of short time delays between photic stimuli by means of pattern induced flicker
Competition between cutaneous vasodilate vasoconstrictor reflexes in man		colors /PIFCs/
rasoconstitutor refreses in man		
RELATIVE BIOLOGICAL EFFECTIVENESS (RBE) Analysis of the results of an investiga	A74-18559	Stereoscopic aftereffects - Evidence for disparity-specific neurones in the human visual system
biological effect of heavy ions with linear energy losses on the basis of	different	A74-184C Composite adaptation and spatial frequency
theoretical inactivation model (inter of experiments with E. coli)		interactions
RELAXATION (PHYSIOLOGY)	N74-14795	The constancy of object orientation - Compensation for ocular rotation
Resting metabolism and thermoregulation unrestrained rabbit	in the	A74-1862' RETINAL IMAGES
RENAL FUNCTION	A74-18569	Evoked potentials specific to spatial patterns of luminance and colour
Metabolism under extremal conditions of flight and during its simulation		A74-18412 Perception of structure in flashes and in
RESEARCH PROJECTS	A74-16775	afterimages A74-1841
Medical progress from aerospace researc Biomedical Application Team Program	h NASA	Visual information obtained from flashes and from afterimages
(AIAA PAPER 74-276]	A74-18678	A74-18419 Torsional eye movements and constancy of the
Alveolar CO2 tension control and the me voluntary respiration control in man	chanisms of	visual field A74-1841
Betabolic analyzer for Skylab missi		Equivalent-background transformation for spatially, temporally, and chromatically
[ NASA-TE-X-64797 ] RESPIRATORY PHYSIOLOGY	N74-13819	differing photopic stimuli A74-1842
Effect of local stimulation of pons Var respiratory neuron activity and respi		Visual imagery differences and eye movements in the recall of pictures A74-1862.
Mechanism of CO2-sensitivity variations respiration center		RHECHETERS  Measurement of the stroke volume by an integral
Pressure-flow relationships in the isol	A74-16642	rheogram of the human body [NASA-TT-F-15268] N74-1493:
trachea	x74-18560	RHYTHE (BIOLOGY) Numerical computer data on functional connections
Pulmonary capillary blood flow during w spontaneous breathing in man		and phase shifts in the tension rhythm of the cortical and hypothalamic zones during the
Dynamic respiratory response to abrupt	174-18562 change of	formation of a pain stress
inspired CO2 at normal and high oxyge		ROTLYING DISKS  Motion aftereffects following inspection of
End-tidal orygen analysis using a synch pulse generator		contrarotating stimuli A74-1842
Inert gas washout in rats - Enhancement	A74-18573 by	ROTATING ENVIRONMENTS  Rotary plant growth accelerating apparatus for
fluorocarbon infusion	A74-19039	weightlessness simulation (NASA-CASE-ARC-10722-1] N74-1380
RESPIRATORY REPLEXES		
Dynamics of the respiratory controller carotid body hypoxia		S
	A74-18564	SAFRTY
Cardiopulmonary baroreflexes - Integrat responses to sine- and square-wave fo		Safety with high magnetic field systems [ORML-TM-4313] N74-1484:
BBSPIRATORY SYSTEM Digital computer analysis of circulator		SAFETY DEFICES An evaluation of the dynamic performance characteristics of anthropomorphic test devices
respiratory pressures in water-immers breathing liquid in force environment	ed dogs	volume 3 [PB-223106/6] N74-1484
7 Gy	A74-19038	SCIENTISTS On studying the moon scientists psychological
	214 12444	factors in scientific interpretation A74-1725
		B14~112J

SEEDS	SKIN TEMPERATURE (BIOLOGI)
Cytogenetic analysis of seeds of diploid and	Competition between cutaneous vasodilator and vasoconstrictor reflexes in man
autotetrapoid forms of Crepis capillaris after flight on the artificial earth satellite	174-18559
'Kosmos-368,'	Temporal summation related to the mature of the
A74-16667	proximal stimulus for the warmth sense
SEBICIRCULAR CANALS	A74-18631
The influence of the utricle and the efferent	SKYLAB PROGRAM
vestibular activity on the spontaneous afferent	Skylab S071/S072 circadian periodicity experiment experimental design and checkout of hardware
activity of the nerves of the horizontal canal and the anterior vertical canal in the frog	[NASA-CR-114706] N74-14847
[NASA-TT-F-15253] N74-13808	SLEEP
SEMICONDUCTORS (MATERIALS)	Effect of acquisition level on increased
Possible adsorption analog systems for modeling	paradoxical sleep duration due to avoidance
the processes in a living organism	conditioning in the rat [NASA-TT-P-15221] N74-13812
A74-18594	[NASA-TT-F-15221] N74-13812 SLEEP DEPRIVATION
SENSORIMOTOR PERFORMANCE  Double physiological tests for simple motor	Psychophysiology: Relationships in rats between
routines of man	speed of learning and duration of paradoxical
374-16638	sleep during the nycthemeric cycle
Noise coupling between accommodation and	[NASA-TT-F-15222] N74-13775
accompodative vergence	Deficiency in retention of conditioning after
#74-18419  Hand-eye coordination - The role of 'motor memory.'	deprivation of paradoxical sleep in rats [NASA-TT-F-15223] N74-13811
A74-18629	SOCIAL FACTORS
SENSORY DISCRIMINATION	Some problems involving detailed diachronic
Superiority of the discriminatory power of mitral	investigation of processes in the psychic and
cells compared to that of olfactory receivers	social life of man
A74-16798	A74-16814
The effects of stimulus structure and familiarity on same-different comparison reaction time	SODIUM The effect of dipine on phenobarbital induction of
in visual tasks	cytochrome P-450 induction and stimulation of
A74-18623	mitotic activity in the hepatic cells of the rat
Retention of time information in forced-choice	[ NA SA-TT-F-15225 ] N74-13776
duration discrimination	SOLAR ACTIVITY EFFECTS
A74-18625	Heliogeophysical factors of the progress of an
On energy-dependent cues in duration discrimination A74-18628	epidemic process
SENSORY STIMULATION	Level of spontaneous phage production in the
Stimulation of the olfactory neuro-epithelium in	lysogenic system E, coli K12 as a test of solar
man by long duration direct electric currents	activity
A74-16799	A74-16818
Information processing, a behavioral event, and	Perturbations of the terrestrial electromagnetic
cortical neurons	field and the problem of heliobiological relations
A74-17946	A74-16819
A74-17946 Temporal summation related to the nature of the	A74-16819 SOLAR ORBITS
A74-17946	A74-16819
A74-17946 Temporal summation related to the nature of the proximal stimulus for the warmth sense A74-18631 SEPARATORS	A74-16819 SOLAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun A74-18304
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from	A74-16819  SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR RADIATION
A74-17946 Temporal summation related to the nature of the proximal stimulus for the warmth sense A74-18631 SBPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans	A74-16819  SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sum  A74-18304  SOLAR RADIATION  The effect of certain cosmic and geophysical
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from	A74-16819  SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR RADIATION
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS  Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907	SOLAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR RADIATION The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907  SERCTONIN	SOLAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES X-ray fluorometer and solid state detector
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  SEROTONIN Role of biogenous amines in memory sechanisms A74-16740 SECCK TUBES	50LAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun  50LAR RADIATION The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  50LID STATE DEVICES X-ray fluorometer and solid state detector calibration for biologic specimen analysis
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  SEBOTONIN Role of biogenous amines in memory sechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research	SOLAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun  SOLAR RADIATION The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book 174-16812  SOLID STATE DEVICES X-ray fluorometer and solid state detector calibration for biologic specimen analysis (AD-767585)  N74-14851
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis nidulans  A74-17907 SERCTONIN Role of biogenous amines in memory mechanisms A74-16740 SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR RADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  SEBOTONIN Role of biogenous amines in memory sechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research	SOLAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun  SOLAR RADIATION The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION Estabolism under extremal conditions of a space
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907  SERCTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR RADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis nidulans  A74-17907  SEROTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  **NOTATE RADIATION**  SOLAR HADIATION**  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  **SPACE ENVIRONMENT SINULATION**  **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SEROTÔNIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations	SOLAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun  **Notar Radiation**  **Solar Radiation**  **The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  **Solid State Devices**  **Y-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  **SPACE ENVIRONMENT SIMULATION**  **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **SPACE FLIGHT STRESS**  **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **SPACE FLIGHT STRESS**  **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  SEROTÔNIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907 SEROTONIN Role of biogenous amines in memory mechanisms A74-16740 SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386 SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811 SINE WAYES	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SINULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  SEROTÔNIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR RADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SERCTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SINULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous funqi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907 SEROTONIN Role of biogenous amines in memory mechanisms A74-16740 SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386 SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811 SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402 The analysis of the drift rate of moving	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology. Volume 22: Metabolism
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907 SEROTONIN Role of biogenous amines in memory mechanisms A74-16740 SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386 SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811 SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402 The analysis of the drift rate of moving sinusoidal gratings	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis (AD-767585)  N74-14851  SPACE ENVIRONMENT SIMULATION  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology, Volume 22: Metabolism under the extreme conditions of spaceflight and
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907  SEROTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-18421	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology: Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SEROTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE BATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  **Notar Hadiation**  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book 174-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  **SPACE ENVIRONMENT SIMULATION**  **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **SPACE FLIGHT STRESS**  **Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  **Problems of space biology** Volume 22: **Hetabolism under the extreme conditions of spaceflight and during its simulation [NASA-TT-F-15163]  **Notation**  **Notation**
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907  SEROTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-18421	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  N74-14851  SPACE ENVIRONMENT SINULATION  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology. Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907 SEROTONIN Role of biogenous amines in memory mechanisms A74-16740 SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386 SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811 SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402 The analysis of the drift rate of moving sinusoidal gratings A74-18421 SINUSES Asymptomatic sinus disease in aircrew members A74-19047 SIZE DETERRINATION	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  **NT4-18304**  **SOLAR RADIATION**  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book 174-16812*  **SOLID STATE DEVICES**  **Y-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585] **NT4-14851*  **SPACE ENVIRONMENT SIMULATION**  **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775*  **SPACE FLIGHT STRESS**  **Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775*  **Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959*  **Problems of space biology** Volume 22: **Hetabolism under the extreme conditions of spaceflight and during its simulation [NASA-TT-F-15163]**
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SERCTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-19047  SINUSES Asymptomatic sinus disease in aircrew members A74-19047  SIZE DETERMINATION Determination of left ventricular size and shape	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  N74-14851  SPACE ENVIRONMENT SIMULATION  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology: Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation  [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SEROTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-18421  SINUSES Asymptomatic sinus disease in aircrev members A74-19047  SIZE DETERMINATION Determination of left ventricular size and shape A74-18451	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology: Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation  [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SEROTÔNIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE BATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-18421  SINUSES Asymptomatic sinus disease in aircrew members A74-19047  SIZE DETERMINATION Determination of left ventricular size and shape A74-18451	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  NAME ADDIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book ATA-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  NAME ENVIRONMENT SIMULATION  Metabolism under extremal conditions of a space flight and during its simulation Russian book ATA-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book ATA-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations ATA-17959  Problems of space biology. Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SEROTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-18421  SINUSES Asymptomatic sinus disease in aircrew members A74-19047  SIZE DETERMINATION Determination of left ventricular size and shape A74-18451  SKIN (ANATOMY) Influence of nature of distribution of absorbed	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  N74-14851  SPACE ENVIRONMENT SIMULATION  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology. Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation  [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes  N74-14802  SPACE MANUPACTURING  Electrophoresis in space at zero gravity
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907 SEROTONIN Role of biogenous amines in memory mechanisms A74-16740 SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386 SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811 SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402 The analysis of the drift rate of moving sinusoidal gratings A74-18421 SINUSES Asymptomatic sinus disease in aircrev members A74-19047 SIZE DETERBINATION Determination of left ventricular size and shape A74-18451 SKIN (ANATOMY) Influence of nature of distribution of absorbed dose on radiation damage radiosensitivity of	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology. Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation  [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes  STACE HANUPACTURING  Electrophoresis in space at zero gravity  [AIJA PAPER 74-210]  A74-18854
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907  SERCTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-18421  SINUSES Asymptomatic sinus disease in aircrew members A74-19047  SIZE DETERBINATION Determination of left ventricular size and shape A74-18451  SKIM (ANATOMY) Influence of nature of distribution of absorbed dose on radiation damage radiosensitivity of rat organs and systems	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  N74-14851  SPACE ENVIRONMENT SIMULATION  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology. Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation  [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes  N74-14802  SPACE MANUPACTURING  Electrophoresis in space at zero gravity
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SEPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SEROTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-18421  SINUSES Asymptomatic sinus disease in aircrev members A74-19047  SIZE DETERBINATION Determination of left ventricular size and shape A74-18451  SKIN (ANATOMY) Influence of nature of distribution of absorbed dose on radiation damage radiosensitivity of rat organs and systems  N74-14799 Optical effects of pigmentation of temperature	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  A74-18304  SOLAR HADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  SPACE ENVIRONMENT SIMULATION  Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous funqi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology. Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation  [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes  STACE HANUPACTURING  Electrophoresis in space at zero gravity  [AIIA PAPER 74-210]  SPACE PEBCEPTION  Influence of after-movement on muscle memory following isometric muscle contraction
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SPPARATORS  Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907  SEROTÔNIN  Role of biogenous amines in memory sechanisms  A74-16740  SHOCK TUBES  Shock tube application in bio-acoustic research  psychophysiological responses to impulse noise  A74-16386  SIGNAL TO NOISE RATIOS  Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations  N74-14811  SINE WAYES  Visual effects of sinusoidal components of complex gratings - Independent or additive  A74-18402  The analysis of the drift rate of moving sinusoidal gratings  A74-18421  SINUSES  Asymptomatic sinus disease in aircrew members  A74-19047  SIZE DETERBINATION  Determination of left ventricular size and shape  A74-18451  SKIN (ANATOMY)  Influence of nature of distribution of absorbed dose on radiation damage radiosensitivity of rat organs and systems  N74-14799  Optical effects of pigmentation of temperature rise in a two-layer skin simulant system during	SOLAR ORBITS  Interplanetary belt of life for existence and genesis of live systems around sun  NOME RADIATION  The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book 174-16812  SOLID STATE DEVICES  X-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  NOME ENVIRONMENT SIMULATION  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  SPACE FLIGHT STRESS  Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  Filamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  Problems of space biology. Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation [NASA-TT-F-15163]  Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes  SPACE HANUPACTURING Electrophoresis in space at zero gravity  [AIIA PAPER 74-210]  SPACE PERCEPTION  Influence of after-movement on muscle memory following isometric muscle contraction  A74-17295
Temporal summation related to the nature of the proximal stimulus for the warmth sense  SPPARATORS Separation of small circular DNA molecules from the blue-green alga Anacystis midulans A74-17907  SEROTONIN Role of biogenous amines in memory mechanisms A74-16740  SHOCK TUBES Shock tube application in bio-acoustic research psychophysiological responses to impulse noise A74-16386  SIGNAL TO NOISE RATIOS Ways to increase the moise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations N74-14811  SINE WAYES Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402  The analysis of the drift rate of moving sinusoidal gratings A74-18421  SINUSES Asymptomatic sinus disease in aircrew members A74-19047  SIZE DETERMINATION Determination of left ventricular size and shape A74-18451  SKIN (ANATOMY) Influence of nature of distribution of absorbed dose on radiation damage radiosensitivity of rat organs and systems N74-14799 Optical effects of pigmentation of temperature rise in a two-layer skin simulant system during irradiation	SOLAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun  **NAME NADIATION** The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book A74-16812  **SOLID STATE DEVICES** **Cray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767555] N74-14851  **SPACE ENVIRONMENT SIMULATION** Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **SPACE FLIGHT STRESS** **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **PILEMET STRESS** **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **FILAMENTOUS fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  **Problems of space biology. Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation [NASA-TT-F-15163]  **Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes  **SPACE MANUPACTURING** Electrophoresis in space at zero gravity [AIIA PAPER 74-210]  **SPACE PERCEPTION**  **Influence of after-movement on muscle memory following isometric muscle contraction A74-17295  **Accentuation of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution of the perceived velocity in a space of the solution
Temporal summation related to the nature of the proximal stimulus for the warmth sense  A74-18631  SPPARATORS  Separation of small circular DNA molecules from the blue-green alga Anacystis midulans  A74-17907  SEROTÔNIN  Role of biogenous amines in memory sechanisms  A74-16740  SHOCK TUBES  Shock tube application in bio-acoustic research  psychophysiological responses to impulse noise  A74-16386  SIGNAL TO NOISE RATIOS  Ways to increase the noise immunity of a system for registering the bioelectric potentials of man under the influence of prolonged accelerations  N74-14811  SINE WAYES  Visual effects of sinusoidal components of complex gratings - Independent or additive  A74-18402  The analysis of the drift rate of moving sinusoidal gratings  A74-18421  SINUSES  Asymptomatic sinus disease in aircrew members  A74-19047  SIZE DETERBINATION  Determination of left ventricular size and shape  A74-18451  SKIN (ANATOMY)  Influence of nature of distribution of absorbed dose on radiation damage radiosensitivity of rat organs and systems  N74-14799  Optical effects of pigmentation of temperature rise in a two-layer skin simulant system during	SOLAR ORBITS Interplanetary belt of life for existence and genesis of live systems around sun  **Notar Hadiation** The effect of certain cosmic and geophysical factors on the earth's biosphere Russian book 174-16812  **SOLID STATE DEVICES**  **Y-ray fluorometer and solid state detector calibration for biologic specimen analysis [AD-767585]  **SPACE ENVIRONMENT SIMULATION**  **Betabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **SPACE FLIGHT STRES**  **Metabolism under extremal conditions of a space flight and during its simulation Russian book A74-16775  **Pilamentous fungi exposed to spaceflight stresses including known levels of ultraviolet irradiations A74-17959  **Problems of space biology** Volume 22: **Hetabolism under the extreme conditions of spaceflight and during its simulation [NASA-TT-F-15163]  **Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight blatogenesis delay of lymphocytes  **SPACE HANUPACTURING** **Electrophoresis in space at zero gravity [AIIA PAPER 74-210]  **SPACE PERCEPTION**  **Influence of after-movement on muscle memory following isometric muscle contraction  **A74-17295**

SUBJECT INDEX SISTOLE

The two mechanisms of vision		Some dynamic features of depth perception	
Visual effects of sinusoidal components	A74-18192	STEROIDS	A74-18411
gratings - Independent or additive	-	The effect of physical exercise on bindi corticosteroids by transcortin in plan	
Some dynamic features of depth perception	A74-18402 n A74-184 <b>1</b> 1	[NASA-TT-F-15258] STIMULATION	N74-14825
The dissociation of sideways movements f movements in depth ~ Psychophysics		Characterization of a perturbed geomagne as a stimulant	etic field
movements in debth - islemobilistes	A74-18413	AD a beingiene	A74-16816
SPACE SHUTTLES		STORACE	
Simulator evaluation of display concepts monitoring and control of space shuttl and landing, Phase 2: Manual flight	e approach	The influence of long-term intermittent to hypoxia on qastric emptying time in	
[ NA SA - CR - 2359 ]	N74-13817	STRESS (PHISIOLOGY)	
SPACE SUITS	3 3	An environmental chamber system for prol	Longed
Physiological and engineering study of a thermorequiatory systems for extravehi		metabolic studies on small animals	174-17961
space suits [NASA-CR-130811]	N74-14846	Assessment of performance in a link GAT- simulator at three alcohol dose levels	-1 flight
SPACECRAPT ENVIRONMENTS	474-14040	SINGISTOR OF CHIEF GROUND GOOD 207020	A74-19043
Cytogenetic analysis of seeds of diploid autotetrapoid forms of Crepis capillar	and is after	Morphological changes in muscles and ner extremities under conditions of overtr	caining
flight on the artificial earth satelli 'Kosmos-368.'	te	[NASA-TT-P-15251] Free 17-0ECS levels in parotid fluid as	N74-13773 indicators
ADJARANJAN ANDRESTATION	174-16667	of hyperthermic stress	N74-14842
SPACECRAFT STERILIZATION An observation about the relative hardin	Acc Af	[AD-767207] STRESS (PSYCHOLOGY)	N/4-14642
bacterial spores and planetary quarant		Behavioral stress response related to pa	assenger
Scientific and technical services direct	A74-17956	briefings and emergency warning system /Commercial airlines/	
the development of planetary quarantin			A74-17882
for automated spacecraft		Cognitions and 'placebos' in behavioral	research
[NASA-CR-136613] SPATIAL DISTRIBUTION	N74-14831	on ambient noise	A74-17931
Spatial interactions between the red- an	d	Cross-correlation analysis of the tension	
qreen-sensitive colour mechanisms of t	be human	in various cerebral formations during formation of a functional system of de	
	<b>∆74-1840</b> 3		A74-17945
SPATIAL FILTERIBG	_e1	SUBMERGING	
Visual effects of sinusoidal components gratings - Independent or additive		Digital computer analysis of circulatory respiratory pressures in water-innerse	ed dogs
Spatial frequency phase effects in human	174-18402 vision 174-18409	breathing liquid in force environments 7 Gy	A74-19038
The analysis of the drift rate of moving		Water and saline balances during prolone	
sinusoidal gratings	A74-18421	innersion in a water bath	N74-14829
SPECTRUM AWALYSIS		SULFUR COMPOUNDS	
A method of changing the time pattern of stimulus without a temporal change in		. Iron-sulphur proteins - Their possible the origin of life and the development	
composition		metabolic systems	,
	A74-18423		<b>∆74-17954</b>
A figure of merit for Visual colorimeter spectral stimuli	s using	SULFUR OXIDES Studies of smoke damage to trees. 1: 1	Acuta SO2
spectial stimuli	A74-18427	damage symptoms	acute SUZ
SPIKE POTENTIALS		[TR-389-73]	N74-13770
Automatic analysis and detection of REG	spikes A74-17500	SURGERY Idiopathic spontaneous pneumothorax in i	Elyinq
SPINE Aircrew's fitness for flying duties afte		personnel	N74-13793
vertebral fractures and spinal surgery		Aircrew's fitness for flying duties afte	
	N74-13794	vertebral fractures and spinal surgery	
SPORES An observation about the relative hardin	ecs of	Current aspects of cochlear function app	N74-13794
bacterial spores and planetary quarant	ine	flying personnel	
STATISTICAL ANALYSIS	A74-17956	SWEAT	N74-13800
Asymptomatic sinus disease in aircrew me		Diurnal activity rhythm of sweat glands	and
Note regarding the high-altitude symptom		thermal adaptation	A74-16646
short-term residents at 1600m followin transport to 4300m altitude	pq	SYMPTOMOLOGY Asymptomatic sinus disease in aircrew me	embers
ctalishoff to 4200m attitude	A74-19048	animprometre nime dingene in direct me	A74-19047
STATISTICAL DECISION THEORY		Note regarding the high-altitude symptom	matology of
Experimental investigation of visual ima recognition Characteristics probab		short-term residents at 1600m following transport to 4300m altitude	nq
prediction by statistical decision the		Cranshore to Assem attribute	A74-19048
	A74-18930	SYSTOLE	
STELLAR RADIATION Thermodynamics of thermal radiation from	stars	Systolic and diastolic time intervals in alternans - Significance of alternation	
photoautotrophs and biospheres	174-17965	isovolumic relaxation	A74-17302
STEREOSCOPIC VISION		Pulmonary capillary blood flow during no	
Stereoscopic aftereffects - Evidence for		spontaneous breathing in man	
disparity-specific neurones in the hum system	an Visual		A74-18562

T TASK COMPLEXITY Predicting maintenance task difficulty and personnel skill requirements based on design parameters of avionics subsystems
[AD-768415] N74-14852 TECHNOLOGY DTILIZATION Medicine and technology --- application advances since 1934 174-16853 Medical progress from aerospace research --- NASA Biomedical Application Team Program [AIAA PAPER 74-276] TEMPERATURE CONTROL Physiological and engineering study of advanced thermoregulatory systems for extravehicular space suits [ NASA-CB-130811 ] TEMPERATURE EFFECTS Interplanetary belt of life --- for existence and genesis of live systems around sun A74-18304 Study of venous topus in the forearm during

simulated weightlessness (NASA-TT-P-45228)
TEMPERATURE MEASUREMENT

Measuring body temperature by telemetry using a removable probe in an implanted cannula

Comparative investigations of temperature in different regions of the human body during body overheating

N74-14809

An environmental chamber system for prolonged metabolic studies on small animals

A74-17961 TETRACICLINES

The effect of dipine on phenobarbital induction of cytochrone P-450 induction and stimulation of mitotic activity in the hepatic cells of the rat [ NASA-TT-F- 15225] THERAPY X-ray kymographic investigations of the central

circulatory organs in therapeutic baths and in hydrostatic pressure elevation. Their technology, results and potential developments: A review [NASA-TT-F-15227]

Methods for study of cardiovascular adaptation of small laboratory animals during exposure to altered gravity --- bypothermia for cardiovascular control and cancer therapy

N74-14822 THERMAL CONDUCTIVITY

Optical effects of piquentation of temperature rise in a two-layer skin simulant system during irradiation FAD-7676491

THERMAL RADIATION Thermodynamics of thermal radiation from stars photoautotrophs and biospheres

A74-17965 THERMAL SIMULATION An integrated human thermal system and its unsteady-state simulation

A74-17869 THERMORECEPTORS

Temporal summation related to the pature of the proximal stimulus for the warmth sense

Specific role of wrists in thermoregulation of man 174~15645 An integrated human thermal system and its

unsteady-state simulation A74-17869 Resting metabolism and thermoregulation in the unrestrained rabbit

Regulatory Biology: Depressed Metabolic States [NASA-TM-X-69354] N74-1481 Effect of artificial gravity on thermoregulation, N74-14813 respiratory metabolism and intermediary metabolism of animals N74-14816

The role of brown adipose tissue in temperature regulation --- of hibernating and hypothermic

THORAX

Effective compliance of the total vascular bed and the intrathoracic compartment derived from changes in central venous pressure induced by Volume changes in man A74-18453

THRESHOLDS (PERCEPTION)
Visual effects of sinusoidal components of complex gratings - Independent or additive A74-18402

Spatial interactions between the red- and green-sensitive colour mechanisms of the buman visual system

Chromatic rod activity at mesopic intensities A74-18605 The dissociation of sideways movements from

novements in depth - Psychophysics A74-18413

Visual information obtained from flashes and from afterimages

A74-18415 Composite adaptation and spatial frequency

A74-18420 Bloch's law and a temporal integration model for simple reaction time to light

On energy-dependent cues in duration discrimination

A74-18628 The dynamic behavior of the ear in separating the sound spectrum into frequency groups --- masking thresholds in auditory frequency perception [NASA-TT-F-12719] N74-13809

THROMBOSIS Dissolution of blood clots, possibilities and problems

TIME DISCRIMINATION

On energy-dependent cues in duration discrimination A74-1862B

TISSUES (BIOLOGY)
Carbon metabolism enzymes and hTP in eyes with disrupted innervation

Lipid composition of slash pine tissue cultures grown with lunar and earth soils

Intermediary metabolism during brief and prolonged low tissue temperature --- mammalian thermoregulation during hibernation and hypothermia

N74-14820 The role of brown adipose tissue in temperature regulation --- of hibernating and hypothermic mammals

TOBACCO

JACCO Influence of smoking and nicotine on cerebral blood flow and metabolic rate of oxygen in man A74-18561

Effect of disulfiram on oxygen toxicity in beagle dogs

TOXICOLOGY

Assessment of performance in a link GAT-1 flight simulator at three alcohol dose levels TRACHEA

Pressure-flow relationships in the isolated canine trachea

TRANSVERSE ACCRIBRATION Influence of transverse accelerations on the activity of human serum cholinesterase N74-14805 THEADMILIS

Returning airmen with abnormal exercise tests and normal coronary angiograms to flying status N74-13788

TREES (PLANTS) Lipid composition of slash pine tissue cultures grown with lunar and earth soils A74-17955 SUBJECT INDEX VISUAL PERCEPTION

Studios of smake damage to tage. 1. 3	auto 603	WESTIBULAR TESTS	
Studies of smoke damage to trees. 1: A damage symptoms [TR-389-73]	N74-13770	The gravity reference response, the rota' sensation, and other illusory sensation experienced in aircraft and space flight	ns ht
U		A useful test in selecting motion-sick-pr	A74-17957
ULTRASONIC WAVE TRANSDUCERS		individuals	.one
Reference apparatus for medical ultrason	ic	- <b>n</b>	A74-17958
transducer		Role of the cerebellum and the vestibular	
[NASA-CASE-ARC-10753-1]	N74-13818	apparatus in regulation of orthostatic	reflexes
ULTRAVIOLET RADIATION		in the cat	A74-18452
Filamentous fundi exposed to spaceflight including known levels of ultraviolet  WHINALYSIS		Effect of westibular tests on orientation to the wertical in healthy and deaf-mu	n relati <b>v</b> e
Proteinurias in flying personnel		VESTIBULES	377 14000
Trootsultus in Trying personner	N74-13802	Efferent innervation of the vestibule [NASA-TT-F-15232]	N74-13778
V		The efferent innervation of the vestibula	
T. T		[NASA-TT-F-15231]	N74-14830
VARIATIONS	ALO MEC AO	VIBRATION EFFECTS Study of the effect of machine and instr	nnant
Importance of the 4 - 5 c/sec rhythm in determine military flying fitness psychological factors in EES patterns		vibrations on the arms of a human oper: variable initial loads	ator under
	N74-13797		A74-1722B
VASCULAR SYSTEM  Effective compliance of the total wascul  the intrathoracic compartment derived		Construction of a dynamic model for the l human operator exposed to the action or wideband wibrations	
changes in central venous pressure ind			A74-17229
volume changes in man		Functional modeling in the biomechanical	analysis
	A74-18453	of the human operator	A74-17230
Study of venous tonus in the forearm dur simulated weightlessness [NASA-TT-F-15228] VASOCONSTRICTION	1114 N74-14828	Technique for an experimental investiqat: dynamic characterístics of a human oper under random vibrational loads	ion of the
Competition between cutaneous vasodilato	r and	Goder Tangos Albiderough round	A74-17231
vasoconstrictor reflexes in man	1 4/14	VIBRATORY LOADS	
	A74-18559	Technique for an experimental investigat:	
VASODILATION		dynamic characteristics of a human oper	cator
Competition between cutaneous vasodilato vasoconstrictor reflexes in man	r and 174-18559	under random wibrational loads	A74-17231
Histamine-induced pulmonary vasodilatati		Quantitative videoangiocardiography, a m	ethod for
calf - Helationship to hypoxia		measuring the heart's pumping function	
	A74-18563		A74-17879
VEGETATION GROWTH		KOISIV	
Rotary plant growth accelerating apparat	us for	The two mechanisms of vision	A74-18192
weightlessness simulation	N74-13807	VISUAL ACCOMMODATION	R/4-10132
[NASA-CASE-ARC-10722-1] VEINS	M14-12001	A centre for accommodative vergence motor	r control
A new catheter technique for His bundle	recordings		A74-18418
via the arm veins	<b>.</b>	Noise coupling between accommodation and	
	A74-17008	accommodative vergence	
Venous reactivity during static exercise	•	PTODIA DIGODININAMICA	A74~18419
/handgrip/ in man	a74-18565	VISUAL DISCRIMINATION  Binocular masking level differences in s	innsoidal
Angioarchitectonics of the cerebellum co		grating detection	180001802
of man		<b>,</b> ,	A74-18416
	A74-19190	The constancy of object orientation - Co	mpensation
VELOCITY		for ocular rotation	A74-18627
Accentuation of the perceived velocity intermittent illumination Influence of		Experimental investigation of Visual ima	
relationships	. Jac Patobe	recognition characteristics probab	
*	A74-18075	prediction by statistical decision the	
VENUS (PLANET)			A74-18930
Lack of bacterial survival under Cytherean-oriented conditions		VISUAL FIBLDS Torsional eye movements and constancy of	the
	A74-17951	visual field	A74-18417
VERTEBRAL COLUMN  The risk of minor spinal abnormalities i	n	VISUAL PERCEPTION	E)4-10411
aircrews: Evaluation of ejection case		Stereoscopic aftereffects - Evidence for	
	พ74-13795	disparity-specific neurones in the hum	
VERTICAL MOTION	<i>a</i>	system	
Motion sickness incidence as a function		Perception of structure in flashes and i	A74-18407
frequency and acceleration of vertical sinusoidal motion	•	afterimages	
[AD-768215]	N74-14836		A74-18414
VERTICAL PRECEPTION	•	Visual information obtained from flashes	and from
The role of gravitational cues in the ju	idgment of	afterimages	
visual orientation	37h_10606	Managarah and managarah and managarah	A74-18415
The constancy of object orientation - Co	A74-18626 pensation	Torsional eye movements and constancy of visual field	114 A74-18417
TOL OCHIEF INCRETOR	174-18627	Composite adaptation and spatial frequen	
Effect of westibular tests on orientation to the wertical in healthy and deaf-mu	on relative	interactions	A74-18420

VISUAL STIMULI SUBJECT INDEX

Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli	W
A74-18422	WARNING SYSTEMS
The role of gravitational cues in the judgment of	Behavioral stress response related to passenger
visual orientation	briefings and emergency warning systems
A74-18626	/Commercial airlines/
Brightness selectivity in the motion aftereffect	A74~17882
A74-18630	WATER BALANCE
Detection of short duration light signals	Water and saline balances during prolonged
presented in the periphery	impersion in a water bath
[AD-767320] N74-14837	[NASA-TT-F-15229] N74-14829
Frequency threshold for two flash flicker and	WATER PRESSURE
critical flicker: Why they differ [AD-767322] N74-14840	X-ray kymographic investigations of the central circulatory organs in therapeutic baths and in
, , , , , , , , , , , , , , , , , , , ,	hydrostatic pressure elevation. Their
ISUAL STIMULI Properties of a nystaguus evoked by rhythmic	technology, results and potential developments:
photostimulation	A review
A74-16637	f nasa-tt-f-152271 n74-13777
Visual effects of sinusoidal components of complex	WATER TREATMENT
gratings - Independent or additive	Definition of reverse osmosis requirements for
174-18402	spacecraft wash water recycling
Spatial interactions between the red- and	[PB-222943/3] N74-13823
green-sensitive colour mechanisms of the human	WATER VAPOR
Visual System	Water wapor corrections in oxygen consumption calculations
174-18403 Latency functions in human vision	A74-18575
174-18404	WAVEGUIDES
Detection of short time delays between photic	Wavequide modes and light absorption in
stimuli by means of pattern induced flicker	photoreceptors
colors /PIFCs/	A74-18426
174-18406	WEIGHTLESSNESS SIMULATION
Contributions of the primary chromatic mechanisms	Rotary plant growth accelerating apparatus for
to the generation of visual evoked potentials	weightlessness simulation
174-18408	[NASA-CASB-ARC-10722-1] N74-13807
Spatial frequency phase effects in buman vision A74-18409	The value of exercise at one-half earth gravity in preventing adaptation to simulated weightlessness
Frequency spectrum of optokinetic mystagmus in the	INASA-CR-1365691 N74-14824
normal monkey	Study of venous tonus in the forearm during
174-18410	simulated weightlessness
Some dynamic features of depth perception	[ NASA-TT-F-15228 ] N74-14828
A74-18411	WORK CAPACITY
Evoked potentials specific to spatial patterns of	Predicting effects of heat acclimatization on
luminance and colour	heart rate and rectal temperature
A74-18412	A74-18568
A centre for accommodative vergence motor control	NORK-REST CYCLE
A74-18418 The analysis of the drift rate of moving	Analysis of the 'negative phase' of oxygen consumption during a recovery period following
sinusoidal gratings	intense muscular activity
A74-18421	174-16643
Equivalent-background transformation for	WRIST
spatially, temporally, and chromatically	Specific role of wrists in thermoregulation of man
differing photopic stimuli	A74-16645
A74-18422	
A method of changing the time pattern of a light	Х
stimulus without a temporal change in spectral	
composition A74-18423	I RAY PLUORESCENCE
Motion aftereffects following inspection of	X-ray fluorometer and solid state detector calibration for biologic specimen analysis
contrarotating stimuli	[AD-767585] N74-14851
A74-18424	X RAY IRRADIATION
Colour-specificity and monocularity in the visual	Effect of previous exposure to a steady magnetic
cortex	field on the histochemical characteristics of
A74-18425	the functional state of the adrenal cortex in
A figure of merit for visual colorimeters using	X-rayed animals
spectral stimuli	A74-19075
A74-18427 The effects of stimulus structure and familiarity	X RAY SPECTROSCOPY  X-ray fluorometer and solid state detector
on same-different comparison reaction time	calibration for biologic specimen analysis
in Visual tasks	[AD-767585] N74-14851
A74-18623	(20 )0/0001
Bloch's law and a temporal integration model for	
simple reaction time to light	
A74-18624	
The constancy of object orientation - Compensation	
for ocular rotation	
ISUAL TASKS	
Cognitions and 'placebos' in behavioral research	
on ambient noise	

A74-18075

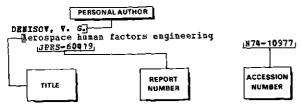
Accentuation of the perceived velocity in intermittent illumination Influence of the phase relationships

### Personal Author Index

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Suppl. 127)

**APRIL 1974** 

### Typical Personal Author Index Listing



The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

#### Δ

ACHRASOVA, IU. W.
Perturbations of the terrestrial electromagnetic
field and the problem of heliobiological relations
A74-16819

AIVAZASHVILI, I, H.
Role of biogenous amines in memory mechanisms
A74-16740

AKA, K. J.

Electrical activity and transmembranar ionic current of the myocardial fiber of the monkey /family of cercopithecidae/

AKSENOV, S. I.

The limits of the adaptation of life to extreme conditions (in connection with problems of exobiology)

ALDREAN, E.

Determination of left ventricular size and shape

A73-1851

ALEKSANDROV, IU. I.
Information processing, a behavioral event, and

CORTICAL DEURODS 174-17946
ALEKSANDROV, S. N.

Change in intensity of ultraviolet fluorescence of blood leukocytes in dogs subjected to chronic irradiation

ALBKSEEV, V. C.
On one method of approximation of processes in uniform biological structures

ALLEN, N. F.
The occurrence of hyperlipidemia in flying and
nonflying subjects of the USAFSAM cardiovascular
disease study

ANGEL, R. W. Hand-eye coordination - The role of 'motor memory,' A74-18629

ANTROFOVA, Y. N.
Study of reactivity of blood lymphoid cells in
crew members of the Soyuz-6, Soyuz-7 and Soyuz-8
spaceships before and after flight
N74-14802

ASATO, Y.

Separation of small circular DNA molecules from the blue-green alga Anacystis midulans

A74-17907

ASTROM, H. R.
Pulmonary capillary blood flow during normal
spontaneous breathing in man

A74-18562

ASYAMOLOV, B. F.

Determining excess pressure on the lower part of
the body ensuring prevention of orthostatic
impairments

ATKINS, A. R.
Application of the 'Hopscotch' algorithm for solving the heat flow equation for the human body
A74-19011

AUFFRET, R,
Aircrew's fitness for flying duties after
vertebral fractures and spinal surgery

WETISOV, G. M.
Influence of nature of distribution of absorbed

Influence of nature of distribution of absorbed dose on radiation damage
N74-14799

AVTONOMOVA, V. A.
Experimental investigation of visual image recognition characteristics

AZHAYEY, A. N.

Comparative investigations of temperature in
different regions of the human body during body
overheating

M74-14869

В

BACHOPEN, H.
Mired venous-arternal difference of molecular
nitrogen in man

A74-18557

Stereoscopic aftereffects - Evidence for disparity-specific pegrones in the human visual system

BALLERHOVSEII, I. S.
Metabolism under extremal conditions of a space
flight and during its simulation
A74-16775

BALAKHOVSKIY, I. S.
Problems of space biology, Volume 22: Metabolism under the extreme conditions of spaceflight and during its simulation
[NASA-TT-F-15163] N74-13813

BALDRIGHI, G.
The gravity reference response, the rotation sensation, and other illusory sensations experienced in aircraft and space flight

Balbuin, K. H.
Simulator evaluation of display concepts for pilot
monitoring and control of space shuttle approach
and landing. Phase 2: Hanual flight control
[NASA-CR-2359] N74-13817

BANKA, V. S.
Use of bicycle ergometry and sustained handgrip exercise in the diagnosis of presence and extent of coronary heart disease

BARANOY, V. P.

Effect of prolonged bypokinesia on certain functions of the otorhinolaryngological organs [NASA-TT-F-15275] N74-14826
BARNETT, T.

End-tidal oxygen analysis using a synchronous

End-tidal oxygen analysis using a synchronous pulse generator

A74-18573

#### PERSONAL AUTHOR INDEX

#### BASTIEE, J.

BASTIRE, J. Current aspects of		function	applied to
flying personnel	_		N74-13800

BACER, R. W. Dark adaptation recovery after pulsed light 174-17294

Lipid composition of slash pine tissue cultures grown with lunar and earth soils

BRAVER, U. L. Hater vapor corrections in oxygen consumption calculations

The risk of minor spinal abnormalities in aircrews: Evaluation of ejection cases N74-13795

BECKER, H. A. Behavioral stress response related to passenger briefings and emergency warning systems /Commercial airlines/ A74-17882

Water and saline balances during prolonged immersion in a water bath | TBASA-TT-F-15229| N74-14829

BELOKRYSERRO, S. S.
Level of spontaneous phage production in the
lysogenic system E. coli K12 as a test of solar activity

Spatial interactions between the red- and green-sensitive colour mechanisms of the human visual system A74-18403

BENNETT, C. A. Dials v counters - Effects of precision on quantitative reading

A74-17293 BRUERLRY, K. I. Some dynamic features of depth perception

The dissociation of sideways movements from movements in depth - Psychophysics

a74-18411

174-18413 BIER, N. Electrophoresis in space at zero gravity

[AIAA PAPER 74-210] a 74-18854 BLANC, P. Current aspects of cochlear function applied to

flying personnel

BLOCH. V. Deficiency in retention of conditioning after deprivation of paradoxical sleep in rats Effect of acquisition level on increased paradoxical sleep deprets of acquisition level on increased

conditioning in the rat [NASA-TT-F-15221] BOBKOVA, N. N.

Cytogenetic investigations of blood leukocytes carried out with crew members of the Soyuz space ships

Effect of vestibular tests on orientation relative to the vertical in healthy and deaf-mute subjects

BOROVIK, G. A.
Carbon metabolism enzymes and ATP in eyes with disrupted innervation

174-16739 BOVE. A. A.

Changes in blood and plasma volumes in dogs during decompression sickness A74-19045

Competition between cutaneous vasodilator and vasoconstrictor reflexes in man

BRENOT, J. Psychophysiology: Relationships in rats between speed of learning and duration of paradoxical sleep during the nycthemeric cycle [NASA-TT-F-15222] N74-13775 BRESLAW, I. S.
Alveolar CO2 tension control and the mechanisms of voluntary respiration control in man

BROCK, D.
Influence of fitness on the blood pressure control system in man 174-19044

BROCK, G. R.
Predicting maintenance task difficulty and personnel skill requirements based on design parameters of avionics subsystems Î AD-768415 1

BROERSE, J. Brightness selectivity in the motion aftereffect A74-18630

BROWN, p. D.
Elevated blood pressure in aircrew

BUDYLIN, V. N. Influence of nature of distribution of absorbed

dose on radiation damage BULYCHEV. V. V.

The effect of dehydration and hyperthermia on the homeostasis of the healthy man [ NASA-TT-P-15250 ] BUNYATYAN, A. F.

The effect of physical exercise on binding of corticosteroids by transcortin in plasma [NASA-TT-F-15258] N74-

BURGER, W. J. Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation [AD-767982] N74-138 N74-13822

BURNS, J. W.
Influence of ethanol on cardiovascular tolerance to +Gz acceleration

BUSERT, A. Influence of fitness on the blood pressure control system in man

BUTKOVSKAIA, Z. B.
Study of the effect of machine and instrument wihrations on the arms of a human operator under wariable initial loads

Effect of previous exposure to a steady magnetic field on the histochemical characteristics of the functional state of the adrenal cortex in

A74-19075

N74-13787

CALVIE, D. Origin of life

CAMBACK. R.

X-raved animals

Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants A74-17964

CARBOTTE, R. M.
Retention of time information in forced-choice duration discrimination

On energy-dependent cues in duration discrimination CARRE, R.

Value of cardiac mechanograms in evaluating flying personnel

CASSUTO, Y.
Inert gas washout in rats - Enhancement by

fluorocarbon infusion a74-19039

CASTON, J. The influence of the utricle and the efferent vestibular activity on the spontaneous afferent activity of the nerves of the horizontal canal and the anterior vertical canal in the froq [NASA-TT-F-15253] N74-1380 N74-13808

CAVALLERO, P. R. Effect of a predictor display on carrier landing performance. Part 2: Laboratory mechanization N7a-13821

ECKERT, P. PERSONAL AUTHOR INDEX

CHAGOVETS, N. R. Analysis of the 'negative phase' of oxyge consumption during a recovery period fo intense muscular activity	en llowing	DBLAHAYB, R. Aircrew's fitness for flying duties after vertebral fractures and spinal surgery	n74-13794
CHATO, J. C. Physiological and engineering study of ad thermoregulatory systems for extravehic		DELORME, A.  Accentuation of the perceived velocity is intermittent illumination Influence of relationships	
space suits [NASA-CR-130811] CHBN, C. P. The influence of long-term intermittent of	N74-14846	DEVILLA, M. A.  Use of bicycle ergometry and sustained be exercise in the diagnosis of presence:	andgrip
to hypoxia on gastric emptying time in		of coronary heart disease	A74-17009
CHERRYAYEVA, T. Y.  The effect of dehydration and hyperthermi homeostasis of the healthy man		The effect of bedrest on adrenal function	a A74-17960
<pre>f NASA-TT-F-15250 ] CHEVALERAUD, J. P. Ophthalmological supervision of diabetic</pre>	N74-13783	DITCHBURF, R. W. Perception of structure in flashes and in afterimages	n
personnel CHEVRIER, J.	N74-13798	Visual information obtained from flashes afterimages	A74-18414 and from
Accentuation of the perceived velocity in intermittent illumination Influence of		DIUBENKO, K. A.	A74-18415
relationships CHIKVAIDZE, V. N.	A74-18075	Angloarchitectonics of the cerebellum comof man	A74-19190
Role of biogenous amines in memory mechan	isms A74-16740	DIVINA, L. Y. Orthostatic stability in an experiment w.	
CLARK, D. A.  The occurrence of hyperlipidemia in flyit ponflying subjects of the USAFSAM cardi		hypodynamia DOBA, N.	N74-14808
disease study	N74-13803	Role of the cerebellum and the vestibula: apparatus in regulation of orthostatic in the cat	r refle <b>x</b> es
CLARRSON, D. P. An environmental chamber system for prolometabolic studies on small animals		DOSANJH, D. S.	A74-18452
COBB, B. B. Relationships between age, ATC experience	A74-17961	Shock tube application in bio-acoustic reports of the power of the pow	esearch 174-16386
ratings of terminal area traffic contro		A useful test in selecting motion-sick-paintividuals	rone A74-17958
COHEN, M. H. Elevator illusion - Influences of otoliti activity and neck proprioception	ı organ A74-18621	DRYSDALE, A. B. Perception of structure in flashes and in afterinages	
COLTHWART, M. Colour-specificity and monocularity in the	ne visual	Visual information obtained from flashes afterimages	
CONRAD, D. W.	A74-18425	DUBLIN, M.	A74-18415
The effects of intermittent noise on human decoding performance and physiological		Filamentous funqi exposed to spaceflight including known levels of ultraviolet	stresses irradiations A74-17959
COLVER, J. F.  Management of qlaucoma in an ageing flyim population		DUCHENE-MARULLAZ, P. Effects of cholinergic innervation on th manualian heart - The cardiomodulator	tonus
	N74-13799	DURWELING, J.	A74-16797
DAVIES, C. T. S.		Effective compliance of the total vascul the intrathoracic compartment derived changes in central venous pressure ind	from
Effects of exercise on adrenocortical fundamental payles, D. G.	174-18570	volume changes in man	A74-18453
Dynamics of the respiratory controller decarotid body hypoxia		Dynamics of the respiratory controller d carotid body hypoxia	
DAYYDOVA, M. G. Level of spontaneous phage production in	A74-18564		A74-18564
lysoqenic system E. coli K12 as a test activity	of solar	EBENEOLTZ, S. M.	
DE MEUROB-LANDOLT, M. Artificial lung - A breakthrough confirm	174-16818 ad	The constancy of object orientation - Co for ocular rotation	apensation
DEDOLPH. R. E.	A74-18196	ECHT, N. Effective compliance of the total vascul	
Rotary plant growth accelerating apparate [NBSA-CASE-ARC-10722-1]	us N74-13807	the intrathoracic compartment derived changes in central venous pressure ind volume changes in man	
DEDOY, f. 1.  The neuroendocrine functional system - Organization, functioning principles		ECKERT, P.	A74-18453
DELACOUR, J.	174-19074	Water and saline balances during prolong immersion in a water bath	ed
Psychophysiology: Relationships in rats speed of learning and duration of para sleep during the nycthemeric cycle	doxical	(NASA-TT-P-15229)	H74-14829
[NASA-TT-F-15222]	N74-13775		

#### PRESONAL AUTHOR INDEX

#### BRRHARDT, L. B.

EHRHARDT.	L.	E.								
			edicto	r di	splay	on ·	car	rier	landing	ţ
perfo									ınizatio	
[AD-7							-		N74-138	121
RICHAN. M.										

Competition between cutaneous vasodilator and vasoconstrictor reflexes in man

A74-18559

EKERT, F. X-ray kymographic investigations of the central circulatory organs in therapeutic baths and in bydrostatic pressure elevation. Their technology, results and potential developments: A review [NASA-TT-F-15227] N74-13777 EL'IASBERG, V. H.

On one method of approximation of processes in uniform hiological structures A74-18933

Changes in blood and plasma volumes in dogs during

decompression sickness 174-19045 ELLIS, J. P., JR.

Forearm amino acid metabolism during chronic physical inactivity

ENTEMAN, C. Intermediary metabolism during brief and prolonged low tissue temperature

Analysis of the 'negative phase' of oxygen consumption during a recovery period following intense muscular activity

A74-16643 EREMIAGIN, A. I. Specific role of wrists in thermoregulation of man A74-16645

The effect of physical exercise on binding of corticosteroids by transcortin in plasma [ NA SA-TT-F-15258] N74-14825

ERICKSON, H. H.

Byocardial and cerebral function during exposure to carbon monoxide

N74-13789

EVSTIGNEEV, V. B.
On evolution of the photosynthetic pigments 174-17963

FAIMAN, M. D.

Effect of disulfiram on oxygen toxicity in headle dogs a74-19042

FAIRCHILD, M. K.
Skylab S071/S072 circadian periodicity experiment [NASA-CR-114706]

FAN. L. T. An integrated human thermal system and its

unsteady-state simulation A74-17869

FANG. H. S.
The influence of long-term intermittent exposures to hypoxia on qastric emptying time in rats A74-17952

The influence of prolonged semi-starvation on the incidence of pulmonary hemorrhage following rapid decompression

A74-17953 PARHI, L. E.

Inert gas washout in rats - Enhancement by fluorocarbon infusion A74-19039

FEDOROVA, R. I. Feasibility of a 'qas exchange' method for detecting extraterrestrial life by identification of nitrogen-fixing microorganisms A74-19072

Effects of exercise on adrenocortical function A74-18570 PINAKOVA, G. V.

Effect of previous exposure to a steady magnetic field on the histochemical characteristics of the functional state of the adrenal cortex in X-rayed animals A74-19075

PLEISCHMANN, R. A.
Drug metabolism and foreign matter hydroxylase
(cytochrome P-450) in severe hepatic damage in man
[NASA-TT-P-15276] N74-14827

FLORIP, D. J. Bark adaptation recovery after pulsed light A74-1729A

Assessment of performance in a link GAT-1 flight simulator at three alcohol dose levels A74-19043

POLSOME, C. E.
Lack of bacterial survival under Cytherean-oriented conditions

A74-17951

FOX, E. L. A simple, accurate technique for predicting maximal aerobic power

174-18572

FRANKSHTEIN, S. I.
Mechanism of CO2-sensitivity variations in the respiration center A74-16642

PROBBLICH, G. H.
Pure tone hearing losses in pilots of various aircraft, age and flying time and its significance for inflight speech communication N74-13801

Returning airmen with abportal exercise tests and normal coronary andiograms to flying status N74-13788

PROLOV, K. V.
Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads

Construction of a dynamic model for the body of a

human operator exposed to the action of random wideband wibrations

Functional modeling in the biomechanical analysis of the human operator

FRYER. T. B. Implantable telemetry systems for use in animal monitoring

A74-17868 FUCHS, H. S. Pathophysiological conditions compatible with flying FAGARD-CP-1291 Technical evaluation report, conclusion and

recommendations N74-43785

## G

GANZ. L. Spatial frequency phase effects in human vision A74-18409

GARBE, J. Training in aviation medicine for doctors and hospital personnel

A74-16852

GARCIA, J. B., JR.
Forearm amino acid metabolism during chronic physical inactivity

A74-19040

GARTERR. W. B. Simulator evaluation of display concepts for pilot monitoring and control of space shuttle approach and landing Phase 2: Manual flight control [NASA-CR-2359] 874-13617

GAUER, O. E.
Effective compliance of the total vascular bed and the intrathoracic compartment derived from changes in central venous pressure induced by volume changes in man

A74-18453

Study of venous tonus in the forearm during simulated weightlessness ¥74-14828 [ NASA-TT-F-15228 ]

PERSONAL AUTHOR INDEX SELPANT, R. S.

Water and saline balances during prolonged GUENTEER, K. immersion in a water bath [NASA-TI-P-15229] Analysis of the results of an investigation of the hiological effect of heavy ions with different linear energy losses on the basis of a 874-14829 GELPARD, R. Dynamic respiratory response to abrupt change of inspired CO2 at normal and high oxygen pressure theoretical inactivation model (interpretation of experiments with E. coli) N74-14795 A74-18571 GURTERR, H. P. Bired venous-arterial difference of molecular Aeronautical rehabilitation of flying personnel nitrogen in man suffering from acute psychiatric disturbances 178~18557 GEORGIYEVSKIY, V. S.
Orthostatic stability in an experiment with 30-day Effect of vestibular tests on orientation relative to the vertical in healthy and deaf-mute subjects hypodynamia N74-14808 GHATAK, P. K. Dynamics of the respiratory controller during Н carotid body hypoxia A74-18564 HADNI, J. C. Aeronautical rehabilitation of flying personnel GIACEBTTI, I. suffering from acute psychiatric disturbances Superiority of the discriminatory power of mitral N74-13796 cells compared to that of olfactory receivers SAGIURA, Y.
Studies of smoke damage to trees, 1: Acute 502 GIBOZA, H. S. Separation of small circular DNA molecules from damage symptoms the blue-green alga Anacystis midulans [TR-389-73] A74-17907 HALL, D. O. Ferredoxins in the evolution of photosynthetic GIVONI, B. systems from anaerobic bacteria to higher plants Predicting effects of heat acclimatization on heart rate and rectal temperature 174-18568 GLUKHAREV, K. K. Changes in blood and plasma volumes in dogs during Functional modeling in the biomechanical analysis decompression sickness of the human operator HAMPRNIK, R. P. Shock tube application in bio-acoustic research GOLDEY, J. A. A74-163B6 Venous reactivity during static exercise /handgrip/ in man HANLON, J. P. Motion sickness incidence as a function of the frequency and acceleration of vertical sinusoidal motion A74-18565 GOLDMAN, R. F. Predicting effects of heat acclimatization on [AD-768215] N74-14836 heart rate and rectal temperature 178-18568 HANNA, H. H. Asymptomatic sinus disease in aircrew members GOLOD, L. 2. Mineralization of human bone tissue under water immersion conditions (roentgenophotometric A74-19047 investigation Cognitions and 'placebos' in behavioral research N74-14810 on ambient noise GORDON, S. L. 174-17931 Analysis of head impact [AD-767319] HARRISON, M. H. N74-14838 Adrenergic beta-receptor blockade and metabolic response to centrifugation stress GORLOV, V. G. Influence of nature of distribution of absorbed dose on radiation damage 374-18558 HARRY, R. End-tidal oxygen analysis using a synchronous pulse generator Orthostatic stability in an experiment with 30-day A74-18573 HART. G. hvoodvnamia N74-14808 The analysis of the drift rate of moving GORSHKOV, M. M. sinusoidal gratings Level of spontaneous phage production in the lysogenic system E. coli K12 as a test of solar A74-18421 Assessment of performance in a link GAT-1 flight simulator at three alcohol dose levels activity A74-16818 A74-19043 COTTLOB. R. Dissolution of blood clots, possibilities and BARTHANN, R. A.
Skylab S071/S072 circadian periodicity experiment
[NASA-CR-114706] 874-1484 problems N74-14847 A74-18175 HANKER, P. W. GRAMMATIKATI, V. S. Influence of nature of distribution of absorbed dose on radiation damage A statistical study of grip retention force N74-13815 FAD-767904 1 HEATH, J. R.
Resting netabolism and thermoregulation in the 374-14799 The value of exercise at one-half earth gravity in preventing adaptation to simulated weightlessness unrestrained rabbit A74-18569 [NASA-CR-136569] N74-19824 HEIDE, J.
Influence of after-movement on muscle memory GRIBEBSKI, A. Efferent innervation of the vestibule [NASA-TT-F-15232] following isometric muscle contraction N74-13778 Drug metabolism and foreign matter hydroxylase (cytochrome P-450) in severe hepatic damage in man [NASA-TT-F-15276] N74-14827 dorphological changes in muscles and nerves of the extremities under conditions of overtraining [ NASA-TT-P-15251] N74-13773 exercise in the diagnosis of presence and extent of coronary heart disease

HENDERSON, D.  Shock tube application in bio-acoustic research A74-16386	HWANG, C. L.  An integrated human thermal system and its unsteady-state simulation
HENNEYIN, B.  Effect of acquisition level on increased	A74-17869
paradoxical sleep duration due to avoidance conditioning in the rat	1
( NA SA-TT-F-15221 ] H74-13812	IAGODINSKII, V. W.  Heliogeophysical factors of the progress of an
BESSIEG, G. B. Binocular masking level differences in sinusoidal	epidemic process A74-16815
grating detection A74-18416	ICHINOSE, N. K.
HBERRY, P. H. Assessment of performance in a link GAT-1 flight simulator at three alcohol dose levels	Lack of bacterial survival under Cytherean-oriented conditions 874-17951
HERNANDEZ-PEREZ, H. J.	<pre>IL'IURHINA, N. I.     Feasibility of a 'gas exchange' method for</pre>
Myocardial and cerebral function during exposure to carbon monoxide	detecting extraterrestrial life by identification of nitrogen-fixing microorganisms A74-19072
N74-13789  HERRICK, R. H.  Detection of short duration light signals	IORDANISHVILL, G. S. Role of biogenous amines in memory mechanisms
presented in the periphery  [AD-767320] N74-14837	IUGANOV, B. B.
Frequency threshold for two flash flicker and critical flicker: Why they differ	Some results of the medico-biological investigations performed under the 'Gemini' and 'Apollo' programs, II - Changes in blood
[AD-767322] N74-14840 HERTIG, B. A. Physiological and engineering study of advanced	characteristics, bone apparatus, and mineral and electrolytic metabolisms of the astronauts
thermorequiatory systems for extravehicular space suits	A74-19073
(NASA-CR-130811) N74-14846 HERTZ, B. G.	Interplanetary belt of life A74-18304
Binocular masking level differences in sinusoidal grating detection	IVANOV, K. P. Specific role of wrists in thermorequlation of man
A74-18416 HILDERTH, J. D.	IVANOVA, B. S
Bloch's law and a temporal integration model for simple reaction time to light	Mechanism of CO2-sensitivity variations in the respiration center
A74-18624 HOCHE, J.	A74-16642
The value of exercise at one-half earth gravity in preventing adaptation to simulated weightlessness [NASA-CR-136569] N74-14824 HOCK, H. S.	JAFFRIB, B. X. A noninvasive pressure-pulse recorder -
The effects of stimulus structure and familiarity on same-different comparison	Development and rationale A74-17910
HOLL, H.	JAMIEC, J. D.  Fluid flow in the lung: A survey. Numerical
Measurement errors of CO analyzers and their influence on the evaluation of the effect of CO in humans	solution for qas mixing in a simple model of the lung, and experimental study of flow in a thin walled collapsible tube
HOLLANDER, H.	[AD-767638] N74-13814 JARVIS, J. R.
Hand-eye coordination - The role of 'motor memory.' A74-18629 HOLTON, E. H.	A method of changing the time pattern of a light stimulus without a temporal change in spectral composition
Regulatory Biology: Depressed Metabolic States [NASA-TM-X-69354] N74-14813	A74-18423 JEANNEROD, M.
HORNER, T. W. A statistical study of grip retention force	The two mechanisms of vision A74-18192
[AD-767904] N74-13815	JORNSON, D. L. Prediction of NIPTS due to continuous noise exposus
Psychophysiology: Relationships in rats between speed of learning and duration of paradoxical	[AD-767205] N74-14841 JOHNSON, J. H.
sleep during the nycthemeric cycle [NASA-TT-F-15222] N74-13775	Competition between cutaneous vasodilator and vasoconstrictor reflexes in man 174-18559
HSTAO, H. End-tidal oxygen analysis using a synchronous pulse generator	JORDAN, J. P. An environmental chamber system for prolonged
A74-16573	metabolic studies on small animals
An integrated human thermal system and its unsteady-state simulation	Netabolic effects of artificial environments N74-14817
HUDETZ, W. J.	K
A computer simulation of the otolith membrane A74-19010	KABDE, V.
NUDOCK, R. J. Reference apparatus for medical ultrasonic	Use of bicycle ergometry and sustained handgrip exercise in the diagnosis of presence and extent
transducer [NASA-CASE-ARC-10753-1] N74-13818	of coronary heart disease
HULLEY, S. B.  The effect of bedrest on adrenal function A74-17960	KADYSKINA, E. N. Study of the effect of machine and instrument
RUSTON, L. J.	vibrations on the arms of a kuman energiate under
	vibrations on the arms of a human operator under variable initial loads
An environmental chamber system for prolonged metabolic studies on small animals  A74-17961	

PERSONAL AUTHOR INDEX KRISTOPPERSON, A. B.

KAPAROV, K. A.		KLIMENKO, V. V.	
The effect of debydration and hypertherm	ia on the	The effect of dipine on phenobarbital in	duction of
homeostasis of the healthy man	470 40000	cytochrome P-450 induction and stimula	
[NASA-TT-F-15250] KAISEH, D.	N74-13783	mitotic activity in the hepatic cells ( [NASA-TT-F-15225]	or the rat N74-13776
Study of venous tonus in the forearm dur.	ing .	KNUDSON, D. E.	174 (3)70
simulated weightlessness	<b>,</b>	Pressure-flow relationships in the isola-	ted canine
	N74-14828	trachea	374 305/0
KALMIKOVA, N. D.	iil 10 d.m	PROBEOU D T	A74-18560
Orthostatic stability is an experiment w hypodynamia	ith 30-day	KNUDSON, R. J.  Pressure-flow relationships in the isola	ted canine
	N74-14808	trachea	
KANEVSKAYA, Y. B.			A74-18560
Respiration of poikilothermic animals in	a	ROCHERGIN, A. V. On one method of approximation of process	4n
helium-oxyqen atmosphere	N74-14798	uniform biological structures	ses in
KARIRY, H. N.	M14 14170		174-18933
Alveolar CO2 tension control and the med	hanisms of	KOLOTVIN, V. A.	
Voluntary respiration control in man	371-16CH1	Change in immunological reactions in hum- subjects under the influence of unfavor	
KATKOVSKIY, B. S.	A74-16641	microclimatic conditions in a pressuri	
Orthostatic stability in an experiment w	ith 30-day		N74-14803
hypodynamia		KONSTANTINOVA, I. V.	
	N74-14808	Study of reactivity of blood lymphoid ce crew members of the Soyuz-6, Soyuz-7 a:	
KAWASHIMA, T. Studies of smoke damage to trees, 1: A	cuta 507	spaceships before and after flight	nd Soyuz-o
damage symptoms	3405 202	apagonia, a social and agone again	N74-14802
[TR-389-73]	N74-13770	KONZ, S. A.	
KEISER, H. N.	a 57:	An integrated human thermal system and in	ts
Assessment of performance in a link GAT- simulator at three alcohol dose levels		unsteady-state simulation	A74-17869
	A74-19043	KOPANEV, V. I.	
KENNEDY, R. S.		Some results of the medico-biological	
Effect of a predictor display on carrier performance. Part 2: Laboratory mech.		investigations performed under the 'Ge' 'Apollo' programs, II - Changes in bloc	
[AD-767983]	N74-13821	characteristics, bone apparatus, and m	
KHAN, A. H.		electrolytic metabolisms of the astron	auts
Systolic and diastolic time intervals in			A74-19073
alternans - Significance of alternating isovolumic relaxation	g	Certain results of the medico-biological investigation conducted in the Gemini	
	A74-17302	programs: Change in weight and indice:	
KHOLODILOV, IU. E.		cardiovascular system in astronauts	
Experimental investigation of visual ima	qe	[NASA-TT-F-15261]	N74-14832
recognition characteristics	A74-18930	Some results of biomedical investigations conducted during the Gemini and Apollo	
KHOLODOV, IU. A.	E74 10550	(alterations in blood and skeletal appropriate	
The effect of certain cosmic and geophys	ical	mineral and electrolyte metabolism in	the
factors on the earth's biosphere	A74-16812	astronauts) [NASA-TT-F-15270]	N74-14834
Reactions to magnetic fields in the orga-		KORNILOVA, L. B.	M/4- 14034
animals and man		Effect of vestibular tests on orientation	n relative
	A74-16817	to the vertical in healthy and deaf-mu	
KHOLODOV, Y. A.  Magnestism in biology		KORZHEN IANTS, V. A.	N74-14806
[JPRS-60737]	N74-13771	Usefulness of hematological and biochemic	cal .
KERUNOY, B. Y.		variables for the differentiation of i	
Analysis of the astronaut's activity whe	n working	acceleration effects	- 3% 4635#
in free space	A74-16666	KOZ'NIAN, E. I.	A74-16754
KHVALIBOVA, B. I.	u 10000	Double physiological tests for simple mo-	tor
Alveolar CO2 tension control and the mec	hanisms of	routines of man	
voluntary respiration control in man	A74-16641	VD10107W W )	A74-16638
KING, W. H.	714-10041	KRASAVIW, Y. A. Analysis of the results of an investigat.	ion of the
Electroencephalogram and aerospace safet	₹	biological effect of heavy ions with d	
	A74-19050	linear energy losses on the basis of a	
KIRSCH, R.	a d	theoretical inactivation model (interp	retation
Water and saline balances during prolong immersion in a water bath	eu	of experiments with E, coli)	N74-14795
[ NASA-TT-F-15229] '	N74-14B29	KBAUSKOPP, J.	M/4 11/22
KISELEV, V. P.		Contributions of the primary chromatic b	
Possible adsorption analog systems for m the processes in a living organism	odeling	to the generation of visual evoked pot	entials A74-18408
che brocesses in a tittid otdatition	A74-18594	KBAVCHERKO, A. A.	714-10400
KISBĪ, J. S.		Effect of vestibular tests on orientation	
Study: Pilot perceived jettison envelop		to the vertical in healthy and deaf-mu	
(AD-7681711 KISSEN, A. T.	N74-13820	KREHER, P.	N74-14806
Free 17-08CS levels in parotid fluid as	indicators	Electrical activity and transmembranar is	onic
of hyperthermic stress		current of the myocardial fiber of the	
[AD-767207]	N74-14842	/family of cercopithecidae/	A79-16800
KLEINHANSS, G. Keasurement errors of CO analyzers and t	heir	KAISTOPPERSON, A. B.	74-1000G
influence on the evaluation of the eff		On energy-dependent cues in duration dis-	
in humans			A74-18628

KRUPINA, T. N.,  Cytogenetic investigations of blood leukocytes carried out with crew members of the Soyuz space ships	LEVASHEY, V. S.  Level of spontaneous phage production in the lysogenic system E. coli K12 as a test of solar activity
N74-14801	A74-16818
RUDRYASHOV, Y. I.  Analysis of the results of an investigation of the biological effect of heavy ions with different	LBWIS, G. W.  Computer reduction and analysis of  neurophysiological data with special emphasis on
linear energy losses on the basis of a theoretical inactivation model (interpretation	evoked potential frequency analysis
of experiments with E coli;	LIN, J. D.
¥74-14795	The influence of prolonged semi-starvation on the incidence of pulmonary bemorrhage following rapid decompression
LAMBERTSEN, C. J.	LIN, RH.
Dynamic respiratory response to abrupt change of inspired CO2 at normal and high oxygen pressure	Pulmonary capillary blood flow during normal spontaneous breathing in man
A74-18571	A74-18562
LANCASTER, M. C. Assessment of performance in a link GAT-1 flight simulator at three alcohol dose levels A74-19043	LINTS, L. M  Predicting maintenance task difficulty and personnel skill requirements based on design parameters of avionics subsystems
Returning airmen with abnormal exercise tests and normal coronary angiograms to flying status	[AD-768415] N74-14852 LIPMAN, R. L.
N74-13788 The repeatability of an abnormal 2-hour qlucose	Forearm amino acid metabolism during chronic physical inactivity
tolerance test	A74-19040
LANGE, A. P.	LISKE, E. Electroencephalogram and aerospace safety
Spatial frequency phase effects in human vision A74-18409	LISUKOVA, T. Y.
LANGE, L.  Effective compliance of the total wascular bed and	The effect of dehydration and hyperthermia on the
the intrathoracic compartment derived from	Aomeostasis of the healthy man {NASA-TT-F-15250} N74-13783
changes in central venous pressure induced by volume changes in man	LIVSHITS, R. Y. Change in imagnological reactions in buman
A74-18453	subjects under the influence of unfavorable
Composite adaptation and spatial frequency	microclimatic conditions in a pressurized chamber N74-14803
interactions A74-18420	LLOYD, T. C., JR. Cardiopulmonary baroreflexes - Integrated
LASETER, J. L. Lipid composition of slash pine tissue cultures	responses to sine- and square-wave forcing A74-18567
grown with lunar and earth soils	LOWENBAUPT, S. B.
174-17955 LEACH, C. S.	Equivalent-background transformation for spatially, temporally, and chromatically
The effect of bedrest on adrenal function	differing photopic stimuli
A74-17960 LEBLANC, J.	LOY, S. L.
Sensitization to metabolic and cardiovascular effects of catecholamines	Predicting maintenance task difficulty and personnel skill requirements based on design
[NASA-TT-F-15220] N74-13774	parameters of avionics subsystems
LECOCQ, F. R. Forearm amino acid metabolism during chronic	[AD-768415] N74-14852 LUTON, J. N., JR.
physical inactivity A74-19040	Safety with high magnetic field systems [ORNL-TM-4313] N74-14848
LECONTE, 5. 6. P.  Bffect of acquisition level on increased	**
paradoxical sleep duration due to avoidance	M
conditioning in the rat [NASA-TT-F-15221] N74-13812	MAC LEOD, P. Superiority of the discriminatory power of mitral
LECONTE, P. Deficiency in retention of conditioning after	cells compared to that of olfactory receivers
deprivation of paradoxical sleep in rats	MARSIMOV, D. G.
[NASA-TT-F-15223] N74-13811 LEE, R. D.	Comparative investigations of temperature in different regions of the human body during body
Reference apparatus for medical ultrasonic transducer	overheating N74-14809
[NASA-CASE-ARC-10753-1] N74-13818	HALETRY, V. V.
LEGENKOV, V. I. Study of reactivity of blood lymphoid cells in	The effect of dehydration and hyperthermia on the homeostasis of the healthy man
crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight	[NASA-TT-P-15250] N74-13783 HAREDOV, A. R.
LEGUAY, G. F74-14802	Cross-correlation analysis of the tension rhythm in warious cerebral formations during the
Cardiac valvulopathies and flight tolerence N74-13790	formation of a functional system of defensive type
Proteinurias in flying personnel	A74-17945 Numerical computer data on functional connections
LESHKEVICH, L. G. N74-13802	and phase shifts in the tension rhythm of the cortical and hypothalamic zones during the
Analysis of the 'negative phase' of oxygen consumption during a recovery period following	formation of a pain stress
intense muscular activity	A74-18595 MANGAMELLI, L. A.
A74-16643	Biomagnetism: A annotated bibliography { NASA-CR-136616 ]
	MANSFIELD, R. J. W. Latency functions in human vision

MASON, W. . E. PERSONAL AUTHOR INDEX

MARKIN, A. S.	MILLER, W. H.
Role of cerebellum in vestibular-cardiac reactions during motion sickness in lower monkeys	Optical function of human peripheral cones
1ARKS, D. P. N74-14812	MILOVIDOVA, S. S.  The effect of dehydration and hyperthermia on the
Visual imagery differences and eye movements in the recall of pictures	homeostasis of the healthy man [NASA-TT-F-15250] N74-13783
MARKS, L. B. A74-18622	MIRS, J. L., III  Banagement of glaucoma in an ageing flying
Temporal summation related to the nature of the proximal stimulus for the warmth sense	population м74-13799
A74-18631	MINE, J.
MARTIF, G. A. Clinical aspects of drug-induced diseases of the liver	Aircrew's fitness for flying duties after vertebral fractures and spinal surgery N74-13794
[NASA-TT-F-15235] N74-13772 SARTINEZ, J. E., II	MITCHELL, B. W.  Measuring hody temperature by telemetry using a
Equivalent-background transformation for spatially, temporally, and chromatically	removable probe in an implanted cannula A74-18574
differing photopic stimuli A74-18422	MITCHELL, D. E. Stereoscopic aftereffects - Evidence for
ART2, W. W. An environmental chamber system for prolonged	disparity-specific neurones in the human visual system
metabolic studies on small animals	A74-18407
1ATBRIN, P. V.	NITCHELL, R. E.  The thousand aviators: Aging and the blood pressure
Respiration of poikilothermic animals in a helium-oxygen atmosphere	M74-13786
N74-14798	On studying the moon scientists A74-17256
Relationships between age, ATC experience, and job ratings of terminal area traffic controllers	<b>SOLBECH,</b> S.  Influence of after-movement on muscle memory
A74-19046	following isometric muscle contraction A74-17295
Effect of prolonged hypokinesia on certain functions of the otorhinolaryhoological organs	MONASTYRSKIKH), L. V. Perturbations of the terrestrial electromagnetic
[ NASA-TT-F-15275 ] N74-14826	field and the problem of heliobiological relations A74-16819
The effect of dehydration and hyperthermia on the	HONTET, J. L.
homeostasis of the healthy man [NASA-TT-P-15250] N74-13783	X-ray fluorometer and solid state detector calibration for biologic specimen analysis
MCCAULEY, H. E.  Hotion sickness incidence as a function of the	[AD-767585] N74-14851 NONTI, P. M.
frequency and acceleration of vertical sinusoidal motion	Cognitions and 'placebos' in behavioral research on ambient noise
[AD-768215] N74-14836 ICEWEN, G. N., JR.	MURAKHOVSKIY, K. I.
Resting metabolism and thermoregulation in the unrestrained rabbit	Mineralization of human bone tissue under water immersion conditions (roentgenophotometric
1CILROY, 8, 8.	investigation) #74-14810
Pulnonary capillary blood flow during normal spontaneous breathing in man	MUSACCHIA, X. J. Radioprotection in depressed metabolic states:
174-18562 CREE, R. C.	The physiology of helium-cold hypothermia N74-14819
Assessment of performance in a link GAT-1 flight simulator at three alcohol dose levels	MUTOVIN, G. R. The effect of dipine on phenobarbital induction of
A74-19043	cytochrome P-450 induction and stimulation of mitotic activity in the hepatic cells of the rat
Use of bicycle ergometry and sustained handgrip	[NASA-TT-F-15225] N74-13776
exercise in the diagnosis of presence and extent of coronary heart disease	MUZALEVSKAIA, N. I. Characterization of a perturbed geomagnetic field
MBNZ, H. P. A74-17009	as a stimulant A74-16816
Drug metabolism and foreign matter hydroxylase (cytochrome P-450) in severe hepatic damage in man	N
[NASA-TT-F-15276] N74-14827 HETGES, P.	MAIDEL', A. V.
Aircrew's fitness for flying duties after vertebral fractures and spinal surgery	Double physiclogical tests for simple motor routines of man
N74-13794	NAKASHIMA, Y.
Orthostatic stability in an experiment with 39-day hypodynamia	Studies of smoke damage to trees, 1: Acute SO2 damage symptoms
M74-14898	(TR-389-73) N74-13770 NARAHARA, K. A.
Peasibility of a 'qas exchapge' method for detecting extraterrestrial life by	The occurrence of hyperlipidemia in flying and nonflying subjects of the USAFSAM cardiowascular
identification of nitrogen-fixing microorganisms	disease study
ILLER, J. S.	NARULA, O. S. A new catheter technique for His bundle recordings
An evaluation of the dynamic performance characteristics of anthropomorphic test devices,	via the arm veins
volume 3 [28-223106/6] N74-14849	NASON, W. E.
ILLER, M. W.  Effect of extremely low frequency electric and	Dials v counters - Effects of precision on quantitative reading
naquetic fields on roots of 'Vicia faba' [AD-767387] N74-13816	A74-17293

A74-19075

PIROZIAN, L. A,

Effect of previous exposure to a steady magnetic
field on the histochemical characteristics of
the functional state of the adrenal cortex in

X-rayed animals

NATOCHIN, IU. V.		PANCHENKO, V. S.	
Metabolism under extremal conditions of flight and during its simulation	a space	Determining excess pressure on the lower p the body ensuring prevention of orthosta	
IIIdur and antital and another and	A74-16775	impairments	78-41-000
NATOCHIN, Y. Y. Problems of space biology, Volume 22;	Metabolism	PANNIER, R.	174-14807
under the extreme conditions of spacef	light and	Asthma in military flying personnel	70
during its simulation (NASA-TT-P-151631	N74-13813	Idiopathic spontaneous pneumothorax in fly	174-13792 'ing
NEMIROVSKIY, 1, Y.  The effect of dipine on phenobarbital in	duction of	personnel 8	174-13793
cytochrome P-450 induction and stimula	tion of	PANOVKO, G. IA.	
mitotic activity in the hepatic cells [NASA-TT-Y-15225]	0f the rat N74-13776	Technique for an experimental investigation dynamic characteristics of a human operating under random wibrational loads	
Properties of a mystagmus evoked by rhyt	haic	ž.	74-17231
photostimulation	A74-16637	PANTLE, A. Visual effects of sinusoidal components of	Complex
NEVSTRUYEVA, M. A.		gratings - Independent or additive	
Change in immunological reactions in hum		PASIK, P.	74-18402
subjects under the influence of unfavo microclimatic conditions in a pressuri	zed chamber	Frequency spectrum of optokinetic mystages	s in the
	N74-14803	normal monkey	74-18410
NEWHAM, C. V.  Motion aftereffects following inspection	of	PASIK, T.	174-1041U
contrarotating stimuli		Frequency spectrum of optokinetic mystagm	s in the
NIEDERBERGER, M.	A74-18424	normal monkey	174-18410
Competition between cutaneous vasodilato	r and	PASK, C.	
vasoconstrictor reflexes in man	A74-18559	Wavequide modes and light absorption in photoreceptors	
WIROLSKIY, L. N.	N14- (033)		174-18426
Ways to increase the noise immunity of a		PAULSON, O. B. Influence of smoking and nicotine on cerel	.r. 1
for registering the bicelectric potent man under the influence of prolonged a		blood flow and metabolic rate of oxygen	
FOGUES, C. Value of cardiac mechanograms in evaluat	ing fl <b>yi</b> ng	PAUMGARTHER, G. Mixed venous-arterial difference of molecu	ılar
personnel	N74-13791	nitrogen in man	74-18557
HOLAN, A. C.		PAVLOV, G. I.	
Digital computer analysis of circulatory		Change in the external respiration function motion sickness	on during
respiratory pressures in water-immerse breathing liquid in force environments			174-14804
7 Gy	A74-19038	PERDRIEL, G. Ophthalmological supervision of diabetic i	flying
NOLAN, R. J.		personnel	174-13798
Effect of disulfiram on oxygen toxicity dogs	in beagle	PERRY, C. L.	174-13790
·	A74-19042	Metabolic analyzer	
NUMBELEY, S. A.  Inert das washout in rats - Enhancement	hv	[NASA-TH-X-64797] PRSTOY, I. D.	174-13819
fluorocarbon infusion		Determining excess pressure on the lower :	
	A74-19039	the body ensuring prevention of orthosta impairments	itic
. 0			N74-14807
		PETROY, A. P.	. b.a
OBERHOLZ, H. Importance of the 4 - 5 c/sec rhythm in	the BEG to	Torsional eye movements and constancy of to visual field	
determine military flying fitness			174-18417
ORBER, P. R.	¥74−13797	PETROVICE, 18. A. Carbon metabolism enzymes and ATP in eyes disrupted innervation	with
Effect of disulfiram on oxygen toxicity dogs	Ju beadte	distupted innervation	A74-16739
	A74-19042	PHLAK, B.	_
OGAWA, S. Studies of smoke damage to trees, 1: A	Acute 502	Hazards of microwave radiation and proposiscreening radar technicians	
damage symptoms [TR-389-73]	N74-13770	[BLL-0A-TRANS-1270-(6196, 3)] PIEKARSKI, G.	N74-14843
OLESEN, J.	W14 13170	Measurement errors of CO analyzers and the	
Influence of smoking and nicotine on cer blood flow and metabolic rate of oxyge	en in man	influence on the evaluation of the effection humans	
OVER, R.	<b>174-18561</b>	PIERGALLINI, J. R.	A74-16851
Brightness selectivity in the motion aft	ereffect A74-18630	Optical effects of pigmentation of temper- rise in a two-layer skin simulant system	
OYAMA, J.  Effect of artificial gravity on thermore	equlation	irradiation [AD-767649]	N74-14839
respiratory metabolism and intermedian		PINE, R.	.,
metabolism of animals	N74-14816	Use of bicycle ergometry and sustained ha exercise in the diagnosis of presence a of coronary heart disease	

P

PANP, K, R,
The constancy of object orientation - Compensation
for ocular rotation
A74-18627

I-38

PLARHATNYUK, V. I. Orthostatic stability in an experiment with 30-day

hvoodvnamia N74-14808

PLATONOVA, R.

Cytogenetic analysis of seeds of diploid and autotetrapoid forms of Crepis capillaris after flight on the artificial earth satellite Kosmos-368.

174-16667

POGODIN, H. a. alveolar CO2 tension control and the mechanisms of voluntary respiration control in man

The effect of dehydration and hyperthermia on the homeostasis of the healthy man [NASA-TT-F-15250]

Orthostatic stability in an experiment with 30-day hypodynamia

N74-14808

POPOVIC, V.

Methods for study of cardiovascular adaptation of small laboratory animals during exposure to

POTERKIN, B. A.

Study of the effect of machine and instrument vibrations on the arms of a human operator under variable initial loads

Construction of a dynamic model for the body of a

human operator exposed to the action of random wideband wibrations

Technique for an experimental investigation of the dynamic characteristics of a human operator under random vibrational loads

A74-17231

POTEMPA. K. W. Predicting maintenance task difficulty and personnel skill requirements based on design parameters of avionics subsystems

N74-14852 FAD-7684151

PROKOF'EV, V. H.

Dependence of the mechanical sensitivity of the eye on the illumination conditions and visual adaptation

A74~16644

PROSIN. D. J. Effect of a predictor display on carrier landing performance. Part 1: Experimental evaluation [AD-767982] N74-13822

PUPATO, A. Medicine and technology

174-16953

PUTNAM. D. F. Definition of reverse osmosis requirements for

spacecraft wash water recycling [PB-222943/3] N74-13823

## Q

QUARRY, V. H. Systolic and diastolic time intervals in pulsus alternans - Significance of alternating isovolupic relaxation

A74-17302

## R

RAINES. J. K.

A nominvasive pressure-pulse recorder -Development and rationale

A78-17910

The effect of bedrest on adrenal function

A74-17960

Ferredoxins in the evolution of photosynthetic systems from anaerobic bacteria to higher plants A74-17964

RNO, S.
A noninvasive pressure-pulse recorder Development and rationale

A74-17910

RAVIART, B. Value of cardiac mechanograms in evaluating flying personnel

RAYMAN, R. B. Myocardial infarction - An in-flight problem

Some dynamic features of depth perception

Evoked potentials specific to spatial patterns of luminance and colour

The dissociation of sideways movements from

movements in depth - Psychophysics A70-18413

REIS, D. J. Role of the cerebellum and the vestibular apparatus in regulation of orthostatic reflexes in the cat

REMMER, H. Drug metabolism and foreign matter hydroxylase (cytochrome P-450) in severe hepatic damage in man

RESPTLE, G. The problem of diabetes mellitus in aviation medicine

N74-13804

RINALDUCCI, E. J.

[ NASA-TT-P-15276]

pulse generator

Equivalent-background transformation for spatially, temporally, and chromatically differing photopic stimuli

A74-18422

End-tidal oxygen analysis using a synchronous

Effect of previous exposure to a steady magnetic field on the histochemical characteristics of the functional state of the adrenal cortex in

570-19075

BOSEH, R. On the dynamical realization of /M, R/-systems A74-17846

ROSSI, G.
The efferent innervation of the vestibular receptors N74-14830 [ NASA-TT-F-15231 ]

ROUGHTON, P. J. R.
Accurate determination of O2 dissociation curve of human blood above 98.7% saturation with data on 02 solubility in unmodified human blood from 0 to 37 C

ROWELL. L. B. Competition between cutaneous vasodilator and vasoconstrictor reflexes in man

Rinetic principles of interaction of components in complex biological systems

Photobiological processes and criteria of existence of living systems

N74-14796

Thermodynamics of thermal radiation from stars photoautotrophs and biospheres A74-17965

RONGE, N. A new catheter technique for His bundle recordings via the arm veins

RUPP, T. D.
I-ray fluorometer and solid state detector calibration for biologic specimen analysis FAD-7675851 N74-14851

RYABICATY, V. A.

Effect of vestibular tests on orientation relative to the vertical in healthy and deaf-mute subjects N74-14806

RYZHOV, W. I.	
Analysis of the results of an investigati	os of the
biological effect of heavy ions with di	fferent
linear energy losses on the basis of a	
theoretical inactivation model (interprof of experiments with E coli)	etation
	N74-14795

১

SAPRONOVA, V. G.
Change in intensity of ultraviolet fluorescence of blood leukocytes in dogs subjected to chronic irradiation
N74-14800

Communication with extraterrestrial intelligence A74-17794
SABBT, P.

A new catheter technique for Bis bundle recordings via the arm veins

SANDLER, B.
Implantable telemetry systems for use in animal monitoring

Determination of left ventricular size and shape A74-18451

SAMFORD, J. F.
Assessment of performance in a link GAT-1 flight
simulator at three alcohol dose levels
A74-19043

SASS, D. J.

Digital computer analysis of circulatory and respiratory pressures in water-immersed dogs breathing liquid in force environments of 1 and 7 Gy

A74-19638

SAURDERS, J.

The role of depressed metabolism in space biology:
An overview

N74-1481

SCHAFFR, G.

Qualitative identification of oral effective
antidiabetica in blood serum of humans
[DLR-FB-73-88] N74-14835
SCHATTE, C. L.

An environmental chamber system for prolonged metabolic studies on small animals

metabolic studies on small animals A74-17961

SCHIRRMANN, G.

German Air Force experiences with certain criteria
for granting a waiver

N74-13806

SCHOBRE, B.

Drug metabolism and foreign matter bydroxylase
(cytochrome P-450) in severe hepatic damage in man
[NASA-TT-F-15276]
874-14827

SCHOLL H.

The dynamic behavior of the ear in separating the sound spectrum into frequency groups

[NASA-TT-F-12719] N74-13809

SCHUBERTOVA, J.

Hazards of microwave radiation and proposals for screening radar technicians

| BLL-0A-TRANS-1270-(6196.3) | N74-1484

SCHOLTZ, W.

Analysis of the results of an investigation of the biological effect of heavy ions with different linear energy losses on the basis of a theoretical inactivation model (interpretation of experience with P. Goli)

of experiments with E. coli)
N74-14795

Venous reactivity during static exercise /bandgrip/ in man

A74-18565
SEMINA, Y. B.
Influence of transverse accelerations on the activity of human serum cholinesterase

SERGEEVA, T. 1. Mechanism of CO2-sensitivity variations in the respiration center

SERGEEVA, Z. N.
Mechanism of CO2-sensitivity variations in the respiration center

A74-16642

SEROY, N. K.

Some problems involving detailed diachronic investigation of processes in the psychic and social life of man

A74-16814

SERVUS, V.

Hazards of microwave radiation and proposals for screening radar technicians
[BLL-OA-TRANS-1270-(6196.3)] N74-14843

SEVERINGHAUS, J. W.
Accurate determination of O2 dissociation curve of human blood above 98.7% saturation with data on O2 solubility in unmodified human blood from C to 37 C

SHARPE C. R.

SHARPE, C. R.
The analysis of the drift rate of moving sinusoidal gratings

A74-18421

SHILLINGER, G. L., JR.

The gravity reference response, the rotation sensation, and other illusory sensations

experienced in aircraft and space flight
174-17957
SHMELEVA, A. B.
Alveolar CO2 tension control and the mechanisms of

Alveolar CO2 tension control and the mechanisms of Voluntary respiration control in man A74-16641

SHUBIK, V. H.

Change in immunological reactions in human
subjects under the influence of unfavorable
microclimatic conditions in a pressurized chamber
N74-14803

SHUTE, D. I.

Reference apparatus for medical ultrasonic transducer
[NASA-CASE-ARC-10753-1] N74-13618

SHVYRROV, V. B.
Information processing, a behavioral event, and

cortical neurons 874-17946

SHVITOV, I. A.

Mathematical evaluation of reliability of functioning of the biological link in a bioengineering system

N74-14797 SIDBLBIKOV, I. A. Change in the external respiration function during

notion sickness N74-14804

SIEGEL, B. S. Measuring body temperature by telemetry using a removable probe in an implanted cannula

SIGEL, C.
Composite adaptation and spatial frequency
interactions
A74-18420

SILOVE, E. D.
Histamine-induced pulmonary Vasodilatation in the calf - Relationship to hypoxia

A74-18563 SIRCHA, A. J. Histamine-induced pulmonary vasodilatation in the

calf - Relationship to hypoxia A74-18563

SIMMONS, J. B., II

An environmental chamber system for prolonged

metabolic studies on small animals

A74-17961

SINON, C. W.

REconomical multifactor designs for human factors
engineering experiments
[AD-767739]

N74-14850

SIMONOY, E, E, Usefulness of hematological and biochemical variables for the differentiation of impact acceleration effects

A74-16754 SINGLETON, W. T. . Theoretical approaches to human error /Erqonomic

Research Society Lecture 1973/ SKINHOJ, E.

Influence of smoking and nicotine on cerebral blood flow and metabolic rate of oxygen in man a74-18561

N74-14805

PERSONAL AUTHOR INDEX TROXLER, B. G.

	•	•	
SHIRHOW, I. W.		STONE, H. L.	
Mass-energy metabolic characteristics of	: algae N74-13781	Implantable telemetry systems for use in monitoring	animal
SHITH, R. J.  Dynamics of the respiratory controller d carotid body hypoxia	uring	STOOP, D. B.	A74-17868
• • • •	A74-18564	Elevated blood pressure in aircrew	N74-13787
SMITH, J. R. Automatic analysis and detection of EEG	spikes A74-17500	STROMBYER, C. F., III Spatial frequency phase effects in human	vision A74-18409
SHITH, R. E. The role of brown adipose tissue in temp regulation		SULLIVAN, P. J.  Note regarding the high-altitude symptom short-term residents at 1600m followin	atology of
SHYSHLYAYRVA, V. V.	N74-14821	transport to 4300m altitude	
Orthostatic stability in an experiment w	ith 30-day	SVIREZHEV, Y. M.	A74-1904B
	N74-14808	Problems of space biology. Volume 20, Mathematical models of biological syst [NASA-TT-7-780]	ems N74-14823
Optical function of human peripheral con	es 474~18401	_	
Wavequide modes and light absorption in photoreceptors	474-10401	M1WGD1 G	
SWYDER, R. S.	A74~18426	TAMURA, H.  Modes of control in manual control syste  (BLL-RTS-7834]	ms N74-14844
Electrophoresis in space at zero gravity [AIAA PAPER 74-210]	A74-18854	TARKSOV, S. 1. Change in immunological reactions in hom	
SOLOV'RY, V. S. Technique for an experimental investigat	ion of the	subjects under the influence of unfavo microclimatic conditions in a pressuri	rable zed chamber
dynamic characteristics of a human ope under random vibrational loads		TARUSOV, B. N.	N74-148C3
SOTER, E. J.	A74-17231	Problems of space biology. Volume 19: of the resistance of biological system	
Modification of one man life raft [NASA-CASE-LAR-10241-1]	N74-14845	[NASA-TT-F-761] TEMIN, G. R.	N74-13779
SOUTH, F. E. Biberanation, sleep, and thermorequiation		Effect of local stimulation of pons Varo respiratory neuron activity and respir	
SOUZA, R. A.	N74-14818	TEMPLETON, W. B.	A74-16640
Survival of common bacteria in liquid cu under carbon dioxide at high temperatu	res	The role of gravitational cues in the ju visual orientation	dqment of
SPARVIER, F.	A74-18286	THOMPSON, A. J.	A74-18626
Considerations and quidelines concerning psychological selection of candidate p	the ilots A74-16770	Returning airmen with abnormal exercise normal coronary angiograms to flying s	
SPODICK, D. H. Systolic and diastolic time intervals in alternans - Significance of alternatin		TIMEGROV, H. A.  Determining excess pressure on the lower the body ensuring prevention of orthos	
isovolumic relaxation	A74-17302	impairments	N74-14807
STABELL, B. Chromatic rod activity at mesopic intens.		TISHCHENKO, M. I.	
	A74-18405	Measurement of the stroke volume by an in the stroke volume by an increase of the human body [NASA-TT-F-15268]	•
Chromatic rod activity at mesopic intens	ities A74-18405	TOLHURST, D. J.	N74-14833
STAMPRE, D. A.		The analysis of the drift rate of moving sinusoidal gratings	
Note regarding the high-altitude symptom short-term residents at 1600m following transport to 4300m altitude	d arotoda or	TRABAL, J. F.	A74-18421
	A74-19048	The repeatability of an abnormal 2-hour of tolerance test	
STANTON, K. C. Elevated blood pressure in aircrew		TRAUTH, C. A., JR.	N74-13805
STECHER, S. Composite adaptation and spatial frequen	N74-13787 E¥	An observation about the relative hardin- bacterial spores and planetary quarant	ess of ine 174-17956
interactions	A74-18420	TREDICI, T. J.	
STEGERANN, J. Influence of fitness on the blood pressu		Management of qlaucoma in an ageing flyi: population	
system in man	a74-19044	TREZONA, P. W.	¥74-13799
STEPANOV, V. K. Change in the external respiration funct:		A figure of merit for visual colorimeter: spectral stimuli	•
motion sickness	K74-14804	TRICOCHE, R.	A74-18427
STEWERS, J. C. Temporal supmation related to the nature	of the	Blectrical activity and transmembranar is current of the myocardial fiber of the /family of cercopithecidae/	
proximal stimulus for the warmth sense	174-18631	TROILER, R. G.	A74-1680C
STOLL, A. M. Optical effects of pigmentation of temper	cature	The repeatability of an abnormal 2-bour of tolerance test	lucose
rise in a two-layer skin simulant syste irradiation			N74-13805
[AD-7676491	N74-14839		

ULBICH, E. T.
Free 17-ONCS levels in parotid fluid as indicators of hyperthermic stress
[AD-767207]
UTRKHIN, V. A.

The effect of dehydration and hyperthermia on the homeostasis of the healthy man [NASA-TT-F-15250] N74-13783

UZIBL, A.
Stimulation of the olfactory neuro-epithelium in
man by long duration direct electric currents
A74-16799

#### V

VACHON, C.
Sensitization to metabolic and cardiovascular
effects of catecholamines
[NASA-TT-F-15220] N74-13774

VALCIURAS, J. A.
Frequency spectrum of optokinetic mystagmus in the normal monkey

VALLIERE, J.

Sensitization to metabolic and cardiovascular effects of catecholamines

[NASA-TT-F-15220]

N74-

VAN BIJK VAN BRIEVINGH, R. P.
Quantitative videoangiocardiography, a method for
measgring the heart's pumping function

A74-17879
WERTANOV, I. D.
Influence of transverse accelerations on the

activity of human serum cholinesterase

VIKHARBY, N. D.
Orthostatic stability in an experiment with 30-day
hypodynamia
N74-14808

WIROVETS, O. A.
Diurnal activity rhythm of sweat glands and
thermal adaptation

N74-16646

VLADIMIRSKII, B. M.

Perturbations of the terrestrial electromagnetic field and the problem of heliobiological relations

VOLZ, P. A.

Filamentous fungi exposed to spaceflight stresses
including known levels of ultraviolet irradiations

VON BAUMGARTEN, R. J.

The gravity reference response, the rotation sensation, and other illusory sensations experienced in aircraft and space flight

A78-17957

VON CAMPENHAUSEN, C.

Detection of short time delays between photic stimuli by means of pattern induced flicker colors /PIFCs/

WOBOLDERSHAUSEN, H. F.

Drug metabolism and foreign matter hydroxylase
(cytochrome P-450) in severe hepatic damage in man
[NASA-TT-F-15276]
N74-14927

#### W

WALDES, M.
Electrical activity and transmembranar ionic current of the myocardial fiber of the monkey /family of cercopithecidae/

#ALKIRSHAB, C. H. Lipid composition of slash pine tissue cultures grown with lunar and earth soils

WALTER, W. H., III
Assessment of performance in a link GAT-1 flight

simulator at three alcohol dose levels
A74-19043
WALUNAS, J. B.
An evaluation of the dynamic performance

An evaluation of the dynamic performance characteristics of anthropomorphic test devices, volume 3 [PB-223106/6] N74-14849

gebster, K. H. . Assessment of performance in a link GAT-1 flight

simulator at three alcohol dose levels

EERTE, J. D.
Lipid composition of slash pine tissue cultures
grown with lunar and earth soils

A74-17955

A74-19048

CEISER, P. C. Note regarding the high-altitude symptomatology of short-term residents at 1600m following transport to 4300m altitude

9BLLS, G. W.
Definition of reverse osmosis requirements for
spacecraft wash water recycling
[PB-222943/3]
N74-1382

WESLEY, H.

Hand-eye coordination - The role of 'motor memory.'

A74-18629

HICKRAMASINGHE, R. H.

Iron-sulphur proteins - Their possible place in
the origin of life and the development of early
metabolic systems

WILEY, R. L. Venous reactivity during static exercise

Venous reactivity during static exercise
/handgrip/ in man
A74-18565

WILSON, D.
A centre for accommodative vergence motor control
A74-18418

Noise coupling between accommodation and accommodative vergence

A74-18419

Study: Pilot perceived jettison envelope
[AD-768171] N74-13820

BOOD, E. H.
Digital computer analysis of circulatory and respiratory pressures in water-immersed dogs breathing liquid in force environments of 1 and

174-19038

WOOLSRY, J. A.
Motion aftereffects following inspection of

contrarotating stimuli
A74-18424

WOOTEN, F. T.
Medical progress from aerospace research
[ATAL PARER 74-276]
A74-18678

WOLFECK, J. W.

Effect of a predictor display on carrier landing performance, Part 1: Experimental evaluation [AD-767982] N74-13822

## Υ

TAGUNOV, A. S. Change in intensity of ultraviolet fluorescence of blood leukocytes in dogs subjected to chronic irradiation

YAKOVLEY, I. Y.

Effect of vestibular tests on orientation relative
to the vertical in healthy and deaf-mute subjects

Effect of prolonged hypokinesia on certain functions of the otorhinolaryngological organs [NASA-TT-P-15275] N74-14826

TAMANAKA, T.

Cytochrome c and evolution of the energy acquiring system

YAHOWITZ, F. G.
Returning airmen with abnormal exercise tests and normal coronary angiograms to flying status
y7m-13788

pormal coronary andiograms to flying status
N74-13788
YELIZAROV, Y. Y.
Problems of space biology. Volume 20

Mathematical models of biological systems [NASA-TT-F-780]
YUGANOV, Y. M.
Certain results of the medico-biological

Certain results of the medico-biological investigation conducted in the Gemini and Apollo programs: Change in weight and indices of the cardiovascular system in astronauts [NASA-TT-F-15261] N74-14832

ZIMIN, A. B. PERSONAL AUTHOR INDEX

Some results of biomedical investigations conducted during the Gemini and Apollo programs (alterations in blood and skeletal apparatus, mineral and electrolyte metabolism in the astronauts)
[NASA-TT-y-15270] N74-14834

Z

ZALKIND, 8. S.
Double physiological tests for simple motor routines of man

A74-16638

ZAZHIRET, V. D. Study of reactivity of blood lymphoid cells in crew members of the Soyuz-6, Soyuz-7 and Soyuz-8 spaceships before and after flight

Venous reactivity during static exercise /handgrip/ in man

A74-18565

ZBLIKSON, B. B. Electrical conductivity variations in a blood stream moving at variable rates A74-16639

ZENKIH, G. H. Torsional eye movements and constancy of the visual field A74~18417

ZHDANOYA, A. G.

Macrometric changes in the makeup of the human bod" in hypodynamia

[NASA-TT-P-15252] K74-1. ZILL, L. P. Survival of common bacteria in liquid culture under carbon dioxide at high temperatures

Respiration of poikilothermic animals in a

helium-oxygen atmosphere

# **PUBLIC COLLECTIONS OF NASA DOCUMENTS**

## DOMESTIC

NASA distributes its technical documents and bibliographic tools to ten special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

**CALIFORNIA** 

University of California, Berkeley

**COLORADO** 

University of Colorado, Boulder

DISTRICT OF COLUMBIA

Library of Congress

**GEORGIA** 

Georgia Institute of Technology, Atlanta

ILLINOIS

The John Crerar Library, Chicago

**MASSACHUSETTS** 

Massachusetts Institute of Technology. Cambridge

MISSOURI

Linda Hall Library, Kansas City

**NEW YORK** 

Columbia University, New York

PENNSYLVANIA

Carnegie Library of Pittsburgh

WASHINGTON

University of Washington, Seattle

NASA publications (those indicated by an "\*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA

Los Angeles Public Library San Diego Public Library

COLORADO

Denver Public Library

CONNECTICUT

Hartford Public Library

MARYLAND

**Enoch Pratt Free Library, Baltimore** 

**MASSACHUSETTS** 

**Boston Public Library** 

**MICHIGAN** 

**Detroit Public Library** 

MINNESOTA

Minneapolis Public Library

**MISSOURI** 

Kansas City Public Library St. Louis Public Library

NEW JERSEY

Trenton Public Library

**NEW YORK** 

**Brooklyn Public Library** 

**Buffalo and Erie County Public Library** 

Rochester Public Library

**New York Public Library** 

OHIO

Akron Public Library

Cincinnati Public Library

Cleveland Public Library

Dayton Public Library

Toledo Public Library

OKLAHOMA

Oklahoma County Libraries, Oklahoma City

TENNESSEE

Memphis Public Library

TEXAS

Dallas Public Library

Fort Worth Public Library

WASHINGTON

Seattle Public Library

**WISCONSIN** 

Milwaukee Public Library

5

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 750 Third Avenue, New York, New York, 10017.

### **EUROPEAN**

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa. Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in STAR. European requesters may purchase facsimile copy or microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "\*", from: ESRO/ELDO Space Documentation Service, European Space Research Organization, 114, av. Charles de Gaulle, 92-Neuilly-sur-Seine, France.